



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

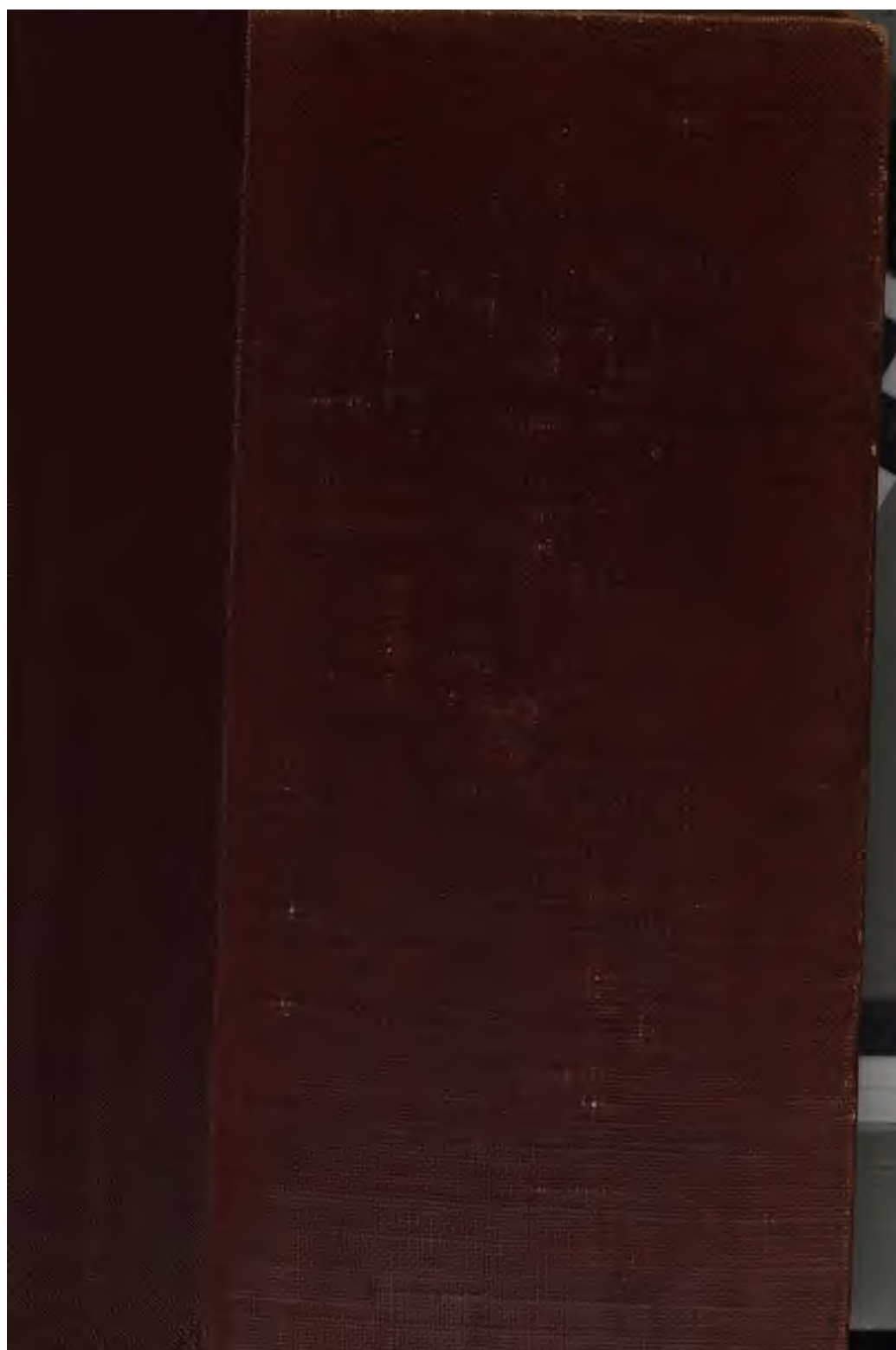
Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>





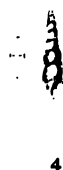
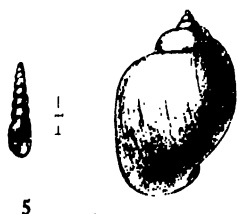
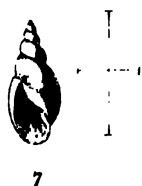
LELAND • STANFORD • JUNIOR • UNIVERSITY



BRANNER
EARTH SCIENCES LIBRARY



J84



1. *Cionella Gloynii* Gibbons. 2. *Succinea gyrata* Gibbons. 3. *Helix Patterdiana* Taylor. 4. *Stenogyra lucida* Gibbons. 5. *Ennea Taylora* Gibbons. 6. *Amphipeplea Patterdi* Nelson. 7. *Physa Brisbanei* Nelson and Taylor. 8. *Physa Biddomei* Nelson and Taylor. 9. *Physa fusiformis* Nelson and Taylor.

THE
JOURNAL
OF
CONCHOLOGY.

ESTABLISHED IN 1874 AS

THE QUARTERLY JOURNAL OF CONCHOLOGY.

VOL II.

1879.

London :
DAVID BOGUE, 3, ST. MARTIN'S LANE, TRAFALGAR SQUARE, W.C.
LEEDS: TAYLOR BROS., ST. ANN STREET.

Ka

240820

444444 444444

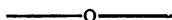
INDEX TO VOL. II.

ORIGINAL ARTICLES.

	PAGE.
<i>Achatina acicula</i> Mull. in the Isle of Wight—C. Ashford ...	267
<i>Ancylus fluviatilis</i> var. <i>albida</i> at Roundhay, near Leeds—W. Nelson ...	282
Annotated catalogue of the species of <i>Cypræidæ</i> collected in the South Sea Islands—A. Garrett	105
Catalogue of the shell-bearing mollusca of Michigan—B. Walker ...	325
<i>Clausilia rugosa</i> var. <i>albida</i> at Smeaton, Yorkshire—W. Nelson ...	185
Colonising land shells—W. F. Petterd	96
Comparison of <i>Omalonyx unguis</i> , D'Orb., with <i>O. felina</i> , Guppy— J. S. Gibbons, M.B.	99
Contributions to a better knowledge of the freshwater shells of Queensland—W. Nelson and J. W. Taylor ...	288
Contributions to a better knowledge of the land and freshwater shells of Yorkshire—Rev. W. C. Hey, M.A.	310
Critical remarks on the Rev J. E. T. Woods' "Census of Tasmanian Shells"—W. F. Petterd	353
Description of a new variety of <i>Pupa secale</i> — <i>Pupa secale</i> var. <i>edentula</i> —J. W. Taylor	5
Description of <i>Amphipeplea</i> Petterdi, new species from New Guinea —W. Nelson	267
Description of <i>Helix Petterdiana</i> —J. W. Taylor	287
Descriptions of two new species of land shells, and remarks on others collected on the E. African coast—J. S. Gibbons, M.B. ...	138
Descriptions of two species of <i>Helicidæ</i> from Madagascar—E. A. Smith, F.Z.S., Zool. Dep. Brit. Mus.	337
Descriptions of some new Tasmanian <i>Helices</i> —W. F. Petterd ...	210
Descriptions of three new <i>Helices</i> from Australia—W. F. Petterd ...	355
Discovery of <i>Diplomphalus</i> in Tasmania ..	219
„ <i>Gundlachia</i> in ..	137

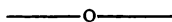
	PAGE.
<i>Helix fusca</i> (Montagu) near Redcar—C. Ashford	128
„ <i>hortensis</i> var. <i>arenicola</i> —J. S. Gibbons, M.B.	264
„ <i>pulchella</i> and <i>H. cellaria</i> of Muller, found in Australia; with notes on their distribution—J. Brazier, C.M.Z.S., &c.	281
„ <i>rotundata</i> v. <i>alba</i> near Harrogate—J. W. Taylor	282
„ <i>lamellata</i> Jeffreys near Redcar—C. Ashford	209
Land and freshwater shells observed in the neighbourhood of Redcar —C. Ashford	236
„ and freshwater shells collected in the alluvium of the Garonne —R. Scharff, Vice-Pres. Conch. Soc.	315
„ shells collected at Puerto Plata, S. Domingo—J. S. Gibbons, M.B.	209
<i>Limnæa peregra</i> , Muller, in Tasmania—W. Nelson	4
List of the freshwater shells of Tasmania—W. F. Petterd	80
„ the <i>Cypræa</i> found in Moreton Bay, Queensland—J. Brazier, C.M.Z.S., Cor. M. Roy. Soc. Tas., &c.	317
„ marine shells collected on Fitzroy Island, North coast of Australia; with notes on their geographical range—John Brazier, C.M.Z.S., &c.	186
„ the Australasian Volutes—W. F. Petterd	340
<i>Nassa trifasciata</i> , Gmelin—F. P. Marratt	78
New species of Tasmanian marine shells—W. F. Petterd	102
Note on <i>Helix Weldii</i> —W. F. Petterd	358
Notes on a hybrid <i>Rumina decollata</i> —R. Scharff	356
Notes on Colonel Montagu's collection of British shells—J. Gwyn Jeffreys, L.I.D., F.R.S.	1
„ <i>Limnæa glutinosa</i> , Muller—C. Ashford	6
„ <i>Nassa elegans</i> , Sow.—F. P. Marratt	78
„ the geographical distribution of <i>Crepidula aculeata</i> , Gmelin —Wm. G. Mazyck	79
„ a few Tasmanian land and freshwater shells—W. Legrand	95
„ the habits and distribution, &c., of certain West Indian <i>pulmonifera</i> —J. S. Gibbons, M.B.	129
„ some of the land shells of Curacoa, W.I.; with descriptions of two new species—J. S. Gibbons, M.B.	135
„ <i>Cochlicopa tridens</i> (Pulteney)—J. W. Taylor	220
„ on the species of the genus <i>Scutus</i> —E. A. Smith, F.Z.S.	252
Occurrence of a new British variety— <i>Pupa secale</i> var. <i>Boileausiana</i> , Charp.—J. W. Taylor	5

	PAGE.
Pupa umbilicata Drap. in South Africa—J. S. Gibbons, M.B. ...	282
Testacella Maugei in Jersey—Martin M. Bull, F.R.C.P.L. ...	98
The Mollusca of the Fiords near Bergen, Norway—Rev. A. M. Norman, M.A. ...	8
The Mollusca of Barents Sea, between Spitzbergen and Novaya Zembla—W. S. M. D'Urban, F.L.S. ...	88
The Conchological fauna in the alluvium of rivers; how to procure the various species and their comparative numbers (paper read before the Conch. Soc. of G. B. & I.)—Robert Scharff, Vice-Pres. Conch. Soc. ...	322
Valvata cristata in the Vale of York—W. Nelson ...	185
Zonites excavatus Bean at Newlay—J. W. Taylor ...	286



REPRINTED ARTICLE.

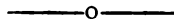
First sketch of a Marine invertebrate fauna of the Gulf of Paria and its neighbourhood—Part I. Mollusca—R. J. Lechmere Guppy, F.L.S., C.M.Z.S., &c., (extracted from the proceedings of the Scientific Association of Trinidad, pp. 134 to 157) ...	151
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----



MISCELLANEOUS NOTES.

Academy of Natural Sciences of Philadelphia—Conchological Section ...	290
American Geological Surveys ...	242
Andrew Garrett ...	266
Exploring Expeditions ...	241
Muscatine Conchological Club ...	266
Museum of Comparative Zoology at Harvard College ...	242
New Catalogue of the Genus Partula ...	265
Science in Muscatine, Iowa ...	290
The formation of Conchological Libraries ...	172
The late C. R. Thatcher ...	172

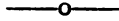
	PAGE.
The Leckenby Collection	290
University Honors	199
Vernacular Names and Folk-Lore	266
Watford Natural History Society and Hertfordshire Field Club	265
Zoological Laboratory at Newport, Rhode Island, U. S.	265
„ Stations at Sydney and Aberdeen	199



NEW SPECIES DESCRIBED IN THIS VOLUME.

Amphipeplea Petterdi—Nelson	267
Cionella Gloynii—Gibbons	135
Columbella alba—Petterd	104
Cythara MacCoyi—Petterd	103
Daphnela Kingensis „	102
Ennea Taylora—Gibbons	141
Fossarina Legrandi—Petterd	104
Gibbula tasmanica—Petterd	103
Helix Barrenensis „	217
„ (Macrocyclus) Covani—Smith	338
„ Dandenongensis—Petterd	355
„ Dyeri—Petterd	210
„ Fernshawensis—Petterd	355
„ Furneauxensis—Petterd	215
„ Henryana „	215
„ Jungermannia „	213
„ Kershawi „	211
„ Lottah „	216
„ Mathinna „	214
„ mimosa „	211
„ Otwayensis—Petterd	356
„ Petterdiana—Taylor	287
„ rosacea—Petterd	213
„ Roblini „	210
„ Spiceri „	212
„ (Ampelita) Shavi—Smith	338
„ Trucanini—Petterd	216
„ Wynyardensis—Petterd	212

	PAGE.
Physa Beddomei—Nelson and Taylor	289
„ brisbanica „ „	288
„ fusiformis „ „	289
Pupa secale var. edentula—Taylor	5
Schismope tasmanica—Petterd	104
Stenogyra lucida—Gibbons	144
Succinea gyrata „	136
Tornatella minuta—Petterd	105



LIST OF AUTHORS

WHO HAVE CONTRIBUTED TO THIS VOLUME.

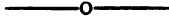
Ashford, C.	6, 128, 209, 241, 267
Brazier, J., C.M.Z.S. &c.,	186, 281, 317
Bull, Martin M., F.R.C.P.L.	98
Garrett, A.	105
Gibbons, J. S., M.B.	99, 129, 135, 138, 209, 264, 282
Guppy, R. J. L., F.L.S., C.M.Z.S., &c.	151
Hey, Rev. W. C., M.A.	310
Jeffreys, Dr. J. Gwyn, F.R.S., &c.	1
Legrand, W.	95
Marratt, F. P.	78
Mazyck, W. G.	79
Nelson, W.	4, 185, 267, 282, 288
Norman, Rev. A. M., M.A.	8
Petterd, W. F.	80, 96, 102, 137, 210, 219, 340, 353, 355, 358
Roebuck, W. D.	172, 199, 241, 242, 265, 266, 290
Scharff, R.	315, 322, 356
Smith, E. A., F.Z.S.	252, 337
Taylor, J. W.	5, 220, 286, 287, 288
Urban, W. S. M. D., F.L.S.	88
Walker, B.	325



viii.

BIBLIOGRAPHY.

146, 173, 176, 200, 222, 245, 268, 292, 345, 358.



PROCEEDINGS OF CONCHOLOGICAL SOCIETY.

178, 182, 243, 283, 291, 352, 368.



THE
JOURNAL
OF
CONCHOLOGY.

ESTABLISHED IN 1874 AS
THE *QUARTERLY JOURNAL OF CONCHOLOGY.*

NOTES ON COLONEL MONTAGU'S COLLECTION OF
BRITISH SHELLS.

By J. GWYN JEFFREYS, LL.D., F.R.S.

Mr. D'Urban, the Curator of the Devon and Exeter Albert Memorial Museum at Exeter, has kindly enabled me to examine the original and typical collection of British shells which belonged to the late Colonel Montagu; and I thought a few words on the collection might be interesting to the readers of the "Journal of Conchology." Montagu's handwriting is quite familiar to me, from having had a great many opportunities of seeing it in former years, when I was a frequent guest of his old correspondent and friend, the late Mr. L. W. Dillwyn. My remarks will only apply to those specimens which are named and referred to in his lists and the corresponding numbers. Several specimens are missing, although the greatest care has evidently been taken by Mr. D'Urban in the protection of the collection. But "'tis nearly sixty years since" the death of Montagu; and private collections of natural history are never preserved intact during so long a period.

It may be observed that Montagu (like all of us) made mistakes, in his case as to the names of certain specimens, as well as in being too credulous with respect to the communications of Capt. Laskey and Mr. Bryer.

The writing of Montagu will be represented by inverted commas. The names are given in the same order as I adopted in "British Conchology."

LAND AND FRESHWATER.

"*Helix rufescens*, hispid." **H. hispida**, L.

"*Helix hispida*." **H. sericea**, Müller.

"*Helix fusca*." One specimen is **H. Cartusiana**, Müller, as is also the Scotch specimen mentioned by Montagu.

"*Turbo muscorum*." One specimen is **Pupa marginata**, Draparnaud; the others are **P. umbilicata**, Drap.

"*Tur. Rolphii*." **Clausilia Rolphii**, (Leach MS.) Gray.

"New from Scotland, Mr. Laskey." **Clausilia parvula**, a Continental species.

In a small turned box, full of *Helix pulchella* and other land and freshwater shells (apparently the rejectamenta of a river or stream), are specimens of *Zonites crystallinus* and *Pisidium fontinale*, neither of which was noticed by Montagu.

MARINE.

CONCHIFERA.

"*Pecten lævis*." **P. maximus**, L., young.

"*Pecten subauriculata*" is represented by two specimens thus named, but in separate boxes. The smaller specimen agrees with Montagu's description and figure, and is a quarter of an inch long. The larger specimen is marked "Zetland, Mr. Fleming," this is **Lima elliptica**, Jeffreys, and is half-an-inch long.

- "Myt. striatus, Bontham, M. Prideaux, Leach." The larger valve is **Crenella rhombea**, Berkeley; the smaller is **Mytilus phaseolinus**, Philippi, young.
- "C.[ardium] arcuatum." **Loripes divaricatus**, L.
- "Solen novacula." **S. siliqua**, L., having the cardinal teeth broken off.

SOLENOCONCHIA.

- "Dentalium striatum." **D. Tarentinum**, Lamarck, young.

GASTROPODA.

- "Patella bimaculata." **Helcion pellucidum**, L., young.
- "Scotland." **Lacuna pallidula**, Da Costa, var. **neritoidea**.
- "T.[urbo] cimex." **Rissoa cancellata**, Da C.
- T. cimex." **Rissoa calathus**, Forbes and Hanley.
- "T. calathiscus?" First two specimens are **Rissoa reticulata**, Montagu, last four **R. calathus**, F. and H.
- "T. reticulatus." **R. punctura**, Mont.
- "Turbo semicostatus." **Rissoa striata**, Adams; young.
- "T. unifasciatus, plain var." **Rissoa cingillus**, Mont., var. **rupestris**.
- "Turbo subumbilicatus." **Hydrobia ulvæ**, Pennant, var. or male.
- "T. unifasciatus." **Barleeia rubra**, Mont., var.
- In a box marked "Weymouth" are Bryer's West Indian species of **Rissoina**. "Turbo coniferus" is a worn specimen of a young **Scalaria**.
- "T. subtruncatus." **Truncatella truncatula**, Drap., young.
- "Turbo [Helix] subcylindrica." **Truncatella truncatula**, Drap., var.
- "T. perforatus." **Aclis supranitida**, S. V. Wood.
- "Tur. crenatus." **Odostomia rufa**, Ph.
- "Both new from Tenby, found by Mr. Lyons 1813."
- Unnamed. **Odostomia obliqua**, Alder.

"Query if *interstinctus*" (sc. Turbo). *Odostomia indistincta*, Mont.

"*T. elegantissimus*, worn." *Odostomia pusilla*, Ph.

"*Helix subulata*." *Eulima bilineata*, Ald., and *E. distorta* (?), Deshayes.

"*Murex reticulatus*," var. ?" *Cerithium reticulatum*, Da C.

"*M. reticulatus*." *Cerithiopsis tubercularis*, Mont.

MARINE PULMONOBRANCHS.

With a specimen of *Velutina lævigata* are three of *Otina otis*, all marked "*Helix lævigata*." The latter may have been received from Mr. Boys as Walker's No. 17.

Ware Priory, Herts,

30th September, 1878.



LIMNÆA PEREGRA, MULLER, IN TASMANIA.

BY W. NELSON.

I have lately received, from Mr. W. T. Bednall of Adelaide, specimens of *Limnæa Hobarttonensis*, described by the Rev. J. E. Tenison Woods, F.G.S., F.L.S., in the "Proceedings and Report of the Royal Society of Tasmania for 1875."

I find on comparison that they are perfectly identical with rather small examples of *Limnæa peregra*, Müller, thus adding another name to the already overgrown synonymy of this most common, varied, and widely dispersed species. The locality given in the description of *L. Hobarttonensis*, Woods, is "very common about waterworks near Hobart-town."

December, 1878.



OCCURRENCE OF A NEW BRITISH VARIETY.

Pupa secale var. Boileausiana, CHARP.

BY JOHN W. TAYLOR.

Amongst some typical specimens of *Pupa secale* collected by Mr. W. Nelson at Dorridge, near Knowle, Warwickshire, is an example of this interesting variety, which has not previously been found in this country. It is distinguished from the type by its "smaller size, the larger plication on penultimate whorl being always double, and by the presence of a prominent additional fold at the angle of the columella."

It is the first British specimen I have seen of this interesting Pyrenean form.

December 1st, 1877.

DESCRIPTION OF A NEW VARIETY OF *PUPA SECALE*.**Pupa secale var. edentula.**

BY JOHN W. TAYLOR.

SHELL smaller, thinner, smooth and glossy; striation regular and fine on the upper whorls, gradually becoming fainter and more irregular on the lower ones; apertural plications obsolete.

This variety was found by me in September, 1877, at the foot of the rocks near Ingleton in Yorkshire. The specimens of the type found in company with it partake of many of the peculiarities enumerated. It furnishes an approach to the continental species, *Pupa avena*.

December 1st, 1877.

NOTE ON *LIMNÆA GLUTINOSA*, MULLER.

By C. ASHFORD.

In October, 1871, I recorded in "Science Gossip" the capture of this species in the river Brusna, King's co. I have now to report its occurrence in the Newry Canal near Knockbridge, co. Down, where Mr. Balkwill and myself found it on the 13th of September. In the Brusna it occurred pretty plentifully resting upon the under side of the floating leaves of the Water Lily (*Nuphar lutea*), and our first search in the Newry Canal was directed to the same plant, but without success. This was possibly owing to the somewhat clumsy means at our disposal for bringing the leaves to bank, for in my search in the Brusna, where I had the advantage of a boat, I noticed that on more than one occasion when a leaf was roughly handled, the animal would disengage its hold and sink in the water. Ultimately we found two specimens adhering to the stems of Buckbean (*Menyanthes trifoliata*) which is not an uncommon plant on the banks.

Its associates in this new locality were *Physa fontinalis*, *Planorbis albus*, *Bithinia tentaculata*, *Lemnæa peregra*, *L. stagnalis*, *L. auricularia* and the young of *Cyclas cornea*.

L. glutinosa does not occur in the list in Thompson's 'Natural History of Ireland,' though the author remarks (vol. iv. p. 303) upon a variety of *L. peregra* of "extreme delicacy" which had been found by himself in loughs Neagh and Erne and received by him from several other localities in Ireland. This variety, however, which he describes as having "an epidermis-like covering of a dull greenish-yellow color," he no doubt rightly identified with the *Gulnaria lacustris* of Leach, the *L. peregra* var. *lacustris* of Jeffreys, and speaks of as "intermediate in form between the typical *L. pereger* and *L. glutinosus*." There is no doubt therefore that *L. glutinosa* as a denizen of Ireland was unknown to Thompson. And yet it seems strange that the species should have

escaped his notice, for since I have met with it in the only two localities which I have searched, and that readily without much loss of time, and have heard from others of its being taken elsewhere, it is only fair to presume that *glutinosa* has an extended and perhaps general distribution in that island. It is extremely desirable to have every possible information respecting this species that the question may be settled whether there is specific or only varietal distinction between it and *L. involuta*. My own opinion is that *L. glutinosa* has broad and persistent characteristics both in shell and animal separating it decisively from *L. peregra*, and that *L. involuta* is merely a well marked variety of *L. glutinosa*, due to continued peculiarity of surroundings producing a cumulative effect upon successive generations. Their animal parts are allowed to be alike, they are both said to exhibit a reflected mantle (peculiar to themselves), and their shells do not differ to anything approaching the same extent as those of the typical *L. peregra* and some of its admitted varieties. I have carefully looked over my thirty-six specimens from King's co., and detect among them not only a slight difference in the extortion of the spire, but also in the proportions of the aperture; and Mr. Jeffreys records specimens received by him "in which the spire is more or less intorted, resembling in this respect the form of *L. involuta*." Surely less powerful agencies may be supposed necessary to have effected the comparatively slight divergence of shape in the shells of these two forms than those which have transformed the ordinary *L. peregra* into the dwarfed and solid *L. maritima* with its produced spire on the one hand, and into the thin, ampullaceous *L. ovata* on the other. It is a fact too of some little relevancy to the question at issue, that those varieties of *L. peregra* which deviate from the typical form in the same direction, so to speak, as *L. involuta* deviates from *L. glutinosa*, viz. :—*L. lacustris* and *L. Burnetti* frequent habitats of a character similar to that in which *L. involuta* has been found. Discussion, however,

will not decide the question. What is required to determine that the one is a variety of the other is a series showing a gradational lapse from *L. glutinosa* the typical, to *L. involuta* the abnormal. If these are not forthcoming the two must hold their present relative position; but it is quite possible that there are specimens already in the cabinets of those interested, which can add another arch or two to bridge the gap. If there are, I hope we shall soon hear of them and be rid of the anomaly of a species unknown to the rest of the world, occupying its solitary tarn in the British Isles.

Grove House, Tottenham.



THE MOLLUSCA OF THE FIORDS NEAR BERGEN, NORWAY.

BY THE REV. A. M. NORMAN, M.A.

The investigation of the fauna of the Shetland Seas during many years occupied my spare time. As a member of the Shetland Dredging Committee, appointed by our British Association to report on the Zoology of our most northern waters, many summer holidays were devoted to this special work, in company with Dr. Gwyn Jeffreys, Mr. Waller, and other naturalists.* I have long felt that it would be a subject of much interest to accurately compare with the Invertebrata of Shetland those of that portion of this Norwegian coast which lies in the same parallel of latitude. This wish long entertained has this year in some degree been satisfied. The end of April found me landing, in the companionship of my old friend Mr. Jeffreys, at Bergen, and the greater part of May was spent in dredging the Fiords to the north and south of that town.

* See Reports of the Shetland Dredging Committee in British Association Reports for 1861, 1863, 1864, 1867, and especially 1868.

The district embraced was, speaking roughly—for I do not know the exact mileage—from 15 miles north to 15 miles south of Bergen. The Fiord chosen to the north being Oster Fiord and the dredging in the south terminating at Kors Fiord.

The weather was remarkably warm for the time of the year, and the circumstances for dredging altogether most favorable.

I received the most kindly welcome and hospitality from all the men of science with whom I came into contact both at Bergen and Christiania; but to Herr Herman Friele, the well-known malachologist of Bergen, I owe very much. Nothing could exceed his hospitality and the kind aid he gave me by his advice as to the localities most likely to prove profitable for dredging, and by the loan of apparatus. Through him I was also enabled to secure as my dredger Mons Olssen, who for the last three years has had charge of the dredging on board the 'Vöringen' during the Norwegian North Atlantic Dredging Expeditions. The 'Vöringen' was not to start on the Spitzbergen Expedition before June, and thus I was enabled to engage Olssen during the earlier part of the year. To his experience, intelligence, and interest in the work my dredging owed much of its success.

During the first week spent in Oster Fiord I had the pleasure of having as my colleagues Dr. Jeffreys and Herr Herman Friele. During the remaining time I was alone.

Dredging in the Norwegian Fiords is a very different matter from what it is in the ocean round Shetland. In the latter case great expense must be incurred. Exposed to every wind which springs up—in the open sea—with an almost constant heavy Atlantic swell—the employment of a yacht or steamer is absolutely necessary, at least when dredging 20–40 miles from land. After tossing about in such a vessel for a week at sea it often happened that hardly twenty hours' dredging was practicable, and the greatest depth reached never exceeded 170 fathoms. Compare with this the dredging in Norway. A small boat with four men will suffice

for our purpose, if furnished with suitable apparatus for lightening the labour of hauling in the dredge. In this we lie calmly on the lake-like surface of a narrow Fiord, where we are never more than about a mile from land, and let down the dredge to find a fauna unknown at Shetland, and approximating to that of deeper parts of the North Atlantic Ocean. It fairly astounds us at first, after what we have been accustomed to during five and twenty years' dredging in our own shallow seas, to drop the dredge over the boat-side and see 400 fathoms of line run out before a resting place is found at the bottom, and this so near to shore that letting out as much line again it is actually possible to pull to shore from this great depth, while the dredge lies still where it was let go, to land and haul it in from the rocks, and if it does not catch—which it probably will do as it mounts the precipice—there to bring it in. It seems incredible until we have proved it that in pulling over those few hundred yards of smooth surface to the shore we have passed over a precipice of more than 2000 feet, which lies hidden by the calm water which ripples against our bows.

Oster Fiord is a deep inlet running far east among the mountains, and is so narrow that the depth is nearly as great as the width. The bottom is almost everywhere a fine grey mud, a deposit which apparently owes its origin to the wearing effects of snow and ice on the surrounding mountains of primitive rocks. From this mud *Globigerinæ* and *Orbulinæ* are almost entirely absent. Indeed I did not find a single *Orbulina*, and only a few *Globigerinæ*, and those depauperated. The mud is characterized by a very great development of Foraminifera belonging to the Bulimina series, *Bulimina (pyrula, marginata, inconstens* Egger,* *Bradii* n. sp. *pupoides* and *ovata*), *Virgulina*, *Bolivina*, *Cassidulina*, *Pullenia*, *Sphaeroidina*, and *Chilostomella*; together with these are abundance of *Uvigerinæ*, *Lagenæ*, *Glandulinæ*, and arenaceous

* Not before, I believe, known as a recent form.

forms belonging to the genera *Lituola*, *Valvulina*, *Reophax*, *Hyperammia*, *Rhabdammina*, *Saccamina*, and *Astrorhiza*. This mud is zoologically very different not only from anything that we have in the British Seas, but also from all those samples of sea-bottom which I have examined from the North Atlantic, procured by the 'Porcupine' and 'Valorous' expeditions. In the North Atlantic sea-bed the dead shells of *Globigerina* and *Orbulina* form the bulk of the "Globigerina-ooze," and indeed are found in marvellous profusion everywhere, except in depths below 2500 fathoms, where they are dissolved ; but in the Norwegian Fiords which I have examined, inorganic material forms the bulk of the mud, and of the Foraminifera living among it the Bulimina allies and arenaceous forms constitute by far the greatest percentage. In 200-400 fathoms on this mud Hydrozoa and Polyzoa are almost entirely absent, *Perigonimus abyssi*, G. O. Sars, is, I think, the only Hydrozoon I observed ; Crustacea are scarce, but represented by *Calocaris McAndrei*, Cumacea,* and a few Ostracoda (*Macropyris minna*, *Cythere abyssicola*, *echinata*, and *Cytherella*) ; Annelids are numerous ; while the molluscan fauna is very rich, and well represented by many recently described and interesting forms, especially *Yoldia* (including the rare *frigida* and *messanensis*), *Malletia obtusa*, *Axinus* of several species including *eumyrius*, *Decipula ovata*, *Pecten vitreus*, *Dentalium striolatum*, *Siphonodentalium Lofotense* and *tetragonum* ; *Cadulus propinquus*, *Cyclostrema basistriatum*, *Rissoa abyssicola*, *Eulima stenostoma*, *Taranis Mörchi*, *Pleurotoma cylindracea*, &c.

The fauna in 50-200 fathoms in this Fiord is also very rich and interesting.

Bukken is a rocky islet and anchorage situated in the centre of a little group of islets which occupy the midchannel when a

* The investigations of Professor G. O. Sars have proved that there is a very rich fauna of *Mysidea* and *Cumacea* at these depths, but my dredge was too heavy and did not pass sufficiently rapidly over the ground to take many of these active swimmers.

ship entering from the ocean by Kors Fiord sails towards Bergen. There is excellent dredging ground everywhere about and among these islets.

The most westerly of the islets, of which Bukken occupies the centre, is Leero, and between this islet and the outer island Sartoro is the main channel, known as Leerosin. Leerosin (Stations 15, 20, 26) has a rough stony bottom with 80-110 fathoms water and is very good ground for those animals which live on hard bottom. Foraminifera here are mainly restricted to species which adhere to stones or other substances, *Valvulina*, *Anomalina*, *Truncatulina*, *Planorbulina*, *Tinoporus lucidus*, *Pulvulinina concentrica*, and such like forms. Sponges are numerous and good including *Phakellia ventilabrum*, *Quasillina brevis* and several apparently undescribed species; the Echinodermata include *Echinus Norvegicus*, *Porania pulvillus*, *Ophiactis Ballii*, *Ophiacantha abyssicola*, *Ophioglypha carnea* and *affinis*; a beautiful coral perhaps that figured by Duncan as *Stylaster gemmascens** is not rare. The annelids are chiefly tube-making species, and numerous Serpulæ. Polyzoa are abundant and good including *Eschara lævis* and *cervicornis*, *Hornera lichenoides* and *violacea*; *Idmonea Atlantica*, *Coronopora truncata*, *Bicellaria Alderi*, *Flustra Barleei*, *Membranipora sacculata*, *rhynchota* and *imbellis*; *Escharipora nitido-punctata*, Smith; *Lepralia abyssicola*, *polita*, *laqueata*, *Megapora ringens*, *Setosella vulnerata*, *Celleporella lepraloides*, &c. Among the rarer mollusca are *Terebratula cranium*, *Pecten Testæ* and *vitreus* var. *abyssorum*, *Lima excavata* and *crassa*, *Arca nodulosa*, *Poromya granulata*, *Neæra jugosa* and *cuspidata*; *Propilidium ancyloides*; *Scissurella crispata*, *Rissoa cimicoides*, *Leocochlis granosa*, *Cerithium metula*, *Cerithiopsis costulata*. Crustacea are scarce.

Kors Fiord requires much more extended investigation than

* Duncan, Madreporaria dredged by 'Porcupine,' 1869, 1870; Trans. Zool. Soc. vol. viii., 1871, p. 332, pl. xlix., figs. 1-15.

it has yet received. I was told that the submerged sides of its southern precipices are one of the chief localities for the magnificent Actinozoa belonging to the genera *Paragorgia*, *Muricea*, *Lophophelia*, &c., for which the Bergen district is so famous. Of some of them I found fragments but did not succeed in procuring fine specimens; but the shelving submerged cliffs gave many very fine sponges, *Geodia*, *Phakellia*, and other genera, together with not a few forms which are unknown to me and believed to be undescribed; for a further account of this ground I would refer to what will be found further on under *Argiope cistellula*, and to the well filled up column of Station 23. The central portion of Kors Fiord towards its mouth has a depth of 200-300 fathoms. Higher up the chart marks "338 fathoms without bottom." Near this place I attempted to dredge. Seven hundred and fifty fathoms of line were let out, but I was unable to work the dredge. It certainly had reached at the bottom, though it seemed from the strain upon the line as it was run out as if it had only just reached it, and when hauled up was empty. Whether this arose from the greatness of the depth, or whether there was a strong under current which lifted it off the ground, I am unable to say. The sea was not, on any subsequent occasion, sufficiently calm to allow of my again attempting this great depth in our small boat. In 200 fathoms the bottom is fine mud not unlike in character to that of Oster Fiord, and the general facies of the fauna is very much the same, but here were the sponges *Trichostemma hemisphericum*, *Wyvillethomsonia Wallichii*, P. Wright, the Echinoderms *Echinocucumis typica*, *Echinus Norvegicus*, *Schizaster fragilis*, *Archaster tenuispinus*, *Amphiura Chiajii* and *Norvegica*, *Ophioglypha carnea*, &c. The mollusca are not so rich as in Oster Fiord, but among them are some which were not met with in that Fiord, e.g., *Limopsis minuta*, *Dentalium agile*, *Cadulus subfusiformis*, *Natica affinis*, *Pleurotoma carinata*.

The following is a list of the Dredging Stations and localities

referred to by the numbers at the heading of the columns. The places named will for the most part be looked for in vain in any ordinary map, and are often merely the name of a farm or few houses. They are given accurately to direct the dredger to the exact spot, and can be found by reference to the best Norwegian chart.*

DREDGING STATIONS, &c.

Oster Fiord.

- 1 and 8.—Off and a little to the west of Bernestangen, Oster Fiord,
50–100 f. 39 mollusca.
- 2.—Off and a little to the west of Bernestangen, Oster Fiord,
100–200 f. 31 mollusca.
- 3.—Off and a little to the west of Bernestangen, Oster Fiord,
30 f. 14 mollusca.
- 4.—Narrow inlet on western side of Drongoen, Oster Fiord,
3–10 f. 25 mollusca.
- 5.—Opposite Bernestangen, Oster Fiord, off Eide, 375 f. 31
mollusca.
- 6.—Opposite Bernestangen, Oster Fiord, off Totlandsvik, 50–
100 f. 25 mollusca.
- 7.—Inlet at Totlandsvaag, 5–10 f. 20 mollusca.
- 9 and 10.—Opposite Hosanger, Oster Fiord, 400 f. 24 mollusca.

Bergen.

- 11.—Bergen Fiord, 50–100 f. 63 mollusca.

Bukken and Kors Fiord.

- 12.—Bukken, tidemarks and shallow water. 31 mollusca.
- 13.—Kors Fiord, directly south of entrance to Bukken, 200–300 f.
13 mollusca.
- 14.—Kors Fiord, south side of, 20–30 f. 23 mollusca.

* Kart over den Norske Kyst fra Korsfjord til Helligøe udgivet af den geografiske Opmaaling 1868.

- 15, 20, 26.—Leerosin, 80-120 f. 36 mollusca.
16.—Bukken, 5-40 f. 55 mollusca.
17.—Entrance to Fane Fiord, between Korsnes and Selö, 50-120 f. 52 mollusca.
18 and 25.—Kors Fiord to the south of entrance to Bukken, 100-200 f. 18 mollusca.
19.—Off Börnestangen in Sartoro, 15-40 f. 63 mollusca.
21.—Haakelsund, Kors Fiord, 3 f. 38 mollusca.
22.—Off Haakelsund, Kors Fiord, 200 f. 18 mollusca.
23.—Kors Fiord, south side, 180 f. 85 mollusca.
24.—N.E. of Bukken (Bay off Sönningen) 5-40 f. 56 fathoms.
27.—N. of Bukken, off Slettin, 5-80 f. 64 mollusca.

The exact depths given must in the case of these Fiords be received with some degree of caution, first, because even littoral shells such as *Mytilus* and *Littorina* will be washed down the precipitous faces of the cliffs and be dredged often in 100-200 fathoms; secondly, because the variation in depth is so sudden that a dredge let down in 200 fathoms may after it has been drawn two or three hundred yards be then either in 100 fathoms shallower or 100 fathoms deeper water. For example, from the character of the animals procured, I am disposed to think that No. 19 must have descended to a greater depth than was supposed.

		Oster Fiord.							
		1 and 8	50—100 f.	2	100—200 f.	3	30 f.	4	3—10 f.
								5	375 f.
								6	50—100 f.
								7	5—10 f.
								9 and 10	400 f.
Brachiopoda.									
1	<i>Terebratula cranium</i> , <i>Müller</i> ...					x			
2	<i>T. caput-serpentis</i> , (<i>Lin.</i>) ...								
3	<i>Argiope cistellula</i> , (<i>S. Wood</i>) ...								
4	<i>Crania anomala</i> , (<i>Müller</i>) ...					x			
Conchifera.									
5	<i>Anomia ephippium</i> , <i>L.</i> , var. <i>squamula</i> , <i>L.</i>					x			
6	" " var. <i>aculeata</i> , <i>Müller</i>								
7	<i>A. patelliformis</i> , <i>Lin.</i> ...								
8	" " var. <i>striata</i> , <i>Loven</i> ...								
9	<i>Ostrea edulis</i> , <i>Lin.</i> ...								
10	<i>Pecten pusio</i> , (<i>Lin.</i>)...								
11	<i>P. varius</i> , (<i>Lin.</i>) ...								
12	<i>P. aratus</i> , (<i>Gmelin</i>) ...	x						x	
13	<i>P. septemradiatus</i> , <i>Müller</i> ...								x
14	<i>P. opercularis</i> , (<i>Lin.</i>) ...						x		
85	<i>P. tigrinus</i> , <i>Müller</i> ...	x							x
16	<i>P. Testæ</i> , <i>Bivona</i> ...								
17	<i>P. striatus</i> , <i>Müller</i> ...	x				x			
18	<i>P. vitreus</i> , (<i>Chem.</i>) ...	x	x					x	
19	var. <i>abyssorum</i> , <i>M. Sars</i> ...		x					x	
20	<i>P. Hoskynsi</i> , <i>Forbes</i> ...								
21	<i>P. similis</i> , <i>Laskey</i> ...	x						x	
22	<i>P. maximus</i> , (<i>Lin.</i>) ...								
23	<i>Lima excavata</i> , (<i>J. C. Fab.</i>) ...		x						x
24	<i>L. hians</i> , (<i>Gmelin</i>) ...	x					x		
25	<i>L. Loscombii</i> , <i>G. B. Sowerby</i> ...								
26	<i>L. subauriculata</i> , (<i>Mont.</i>) ...								

		Bergen Fiord.																																				
		11	50—100 f.	12	Shallow	13	200—300 f.	14	20—30 f.	15, 20, 26	80—120 f.	16	5—40 f.	17	50—120 f.	18, 25	100—200 f.	19	15—40 f.	21	3 f.	22	200 f.	23	180 f.	24	5—40 f.	27	5—80 f.	Shetland.*	Denmark.	Christiania.	Faroe Islands.	Iceland.	Greenland.	N.E. American.	Mediterranean.	
1	x																																					
2	x																																					
3																																						
4	x																																					
5																																						
6																																						
7																																						
8																																						
9																																						
10																																						
11																																						
12	x																																					
13																																						
14																																						
15																																						
16																																						
17																																						
18																																						
19	x																																					
20																																						
21	x																																					
22																																						
23																																						
24																																						
25																																						
26																																						

* In this column x indicates the mollusca which have been found at Shetland, and B marks those species which, though not known in Shetland, occur elsewhere in the British Seas

			Oster Fiord.							
			1 and 8	2	3	4	5	6	7	9 and 10
27	<i>Lima elliptica</i> , <i>Jeffreys</i>	...	...	x			x			x
28	<i>L. crassa</i> , <i>Forbes</i>	...	...	x						
29	<i>Mytilus edulis</i> , <i>Lin.</i>	...	...			x				
30	<i>M. modiolus</i> , (<i>Lin.</i>)	...	...		x					
31	<i>M. phascolinus</i> , (<i>Phil.</i>)	...	...		x					
32	<i>Crenella decussata</i> , (<i>Mont.</i>)	...	...					
33	<i>Nucula nucleus</i> , (<i>Lin.</i>)	...	...			x				
34	<i>N. tumidula</i> , <i>Malm.</i>	...	...		x		x			x
35	<i>N. tenuis</i> , (<i>Mont.</i>)	...	...	x						
36	<i>Leda minuta</i> , (<i>Müller</i>)	...	...					
37	<i>L. pernuta</i> , (<i>Müller</i>)	...	...					
38	<i>Yoldia arctica</i> , (<i>Gray</i>) (fossil?)	...	...					
39	<i>Y. tenuis</i> , (<i>Phil.</i>)	...	...	x			x			
40	<i>Y. lucida</i> , <i>Lovén</i>	...	...	x	x		x	x		x
41	<i>Y. frigida</i> , <i>Torrell</i>	...	...	x	x		x			x
42	<i>Y. Messanensis</i> , (<i>Sequenza</i>)	...	...		x		x			x
43	<i>Malletia obtusa</i> , (<i>M. Sars</i>)	...	...	x			x			x
44	<i>Limopsis minuta</i> , <i>Phil.</i>	...	...					
45	<i>Arca pectunculoides</i> , <i>Scacchi</i>	...	...					x		
46	<i>A. nodulosa</i> , <i>Müller</i>	...	...					
47	<i>A. tetragona</i> , <i>Poli.</i>	...	...					
48	<i>Montacuta bidentata</i> , (<i>Mont.</i>)	...	...					
49	<i>M. ferruginosa</i> , (<i>Mont.</i>)	...	...	x	x					x
50	<i>Decipula ovata</i> , <i>Jeffreys</i>	...	...		x					x
51	<i>Lasæa rubra</i> , (<i>Mont.</i>)	...	...					
52	<i>Kellia suborbicularis</i> , (<i>Mont.</i>)	...	...					
53	<i>Lucina spinifera</i> , (<i>Mont.</i>)	...	...			x				
54	<i>L. borealis</i> , (<i>Lin.</i>)	...	...				x			
55	<i>Axinus flexuosus</i> , (<i>Mont.</i>)	...	...				x			
56	var. <i>Sarsii</i> , <i>Phil.</i>	...	...	x		x	x		x	
57	<i>A. Croulinensis</i> , <i>Jeffreys</i>	...	...					x		
58	<i>A. eumyrius</i> , <i>M. Sars</i>	...	...		x		x			x
59	<i>A. ferruginosus</i> , (<i>Forbes</i>)	...	...	x	x		x	x		x
60	<i>Cyamium minutum</i> , (<i>Fab.</i>)	...	...					

[illegible]

				Oster Fiord.							
				1 and 8	2	3	4	5	6	7	9 and 10
61	<i>Cardium echinatum</i> , <i>Lin.</i>	...	...	x			x				
62	<i>C. fasciatum</i> , <i>Mont.</i>	...	...						x		
63	<i>C. nodosum</i> , <i>Turt.</i>	...	...						x		
64	<i>C. edule</i> , <i>Lin.</i>	...	...				x		x		
65	<i>C. minimum</i> , <i>Phil.</i>	...	...	x				x	x		
66	<i>C. Norvegicum</i> , <i>Spengler</i>	...	...						
67	<i>Kelliella abyssicola</i> , (<i>Forbes</i>) <i>M. Sars</i>	...	...		x			x		x	x
68	<i>Cyprina Islandica</i> , (<i>Lin.</i>)	...	...				x			x	
69	<i>Astarte sulcata</i> , (<i>Da Costa</i>)	...	...	x						x	
70	<i>A. compressa</i> , (<i>Mont.</i>)	...	...							x	
71	<i>A. crenata</i> , <i>Gray</i> (fossil)	...	...						
72	<i>Circe minima</i> , (<i>Mont.</i>)	...	...						
73	<i>Artemis exoleta</i> , (<i>Lin.</i>)	...	...						
74	<i>A. lincta</i> , (<i>Pulteney</i>)	...	...						
75	<i>Venus fasciata</i> , (<i>Da Costa</i>)	...	...						
76	<i>V. casina</i> , <i>Lin.</i>	...	...						
77	<i>V. ovata</i> , <i>Pennant</i>	...	...						
78	<i>V. gallina</i> , <i>Lin.</i>	...	...				x			x	
79	<i>Tapes pullastra</i> , (<i>Mont.</i>)	...	...							x	
80	<i>T. decussatus</i> , (<i>Lin.</i>)	...	...						
81	<i>Tellina Balthica</i> , <i>Lin.</i>	...	...				x				
82	<i>T. calcarea</i> , <i>Chem.</i>	...	...				x				
83	<i>Psammobia Ferroensis</i> , (<i>Chem.</i>)	...	...						
84	<i>P. vespertina</i> , (<i>Chem.</i>)	...	...						
85	<i>Macra elliptica</i> , <i>Brown</i>	...	...						
86	<i>Scrobicularia piperata</i> , (<i>Bellon.</i>)	...	...						
87	<i>Syndosmya alba</i> , (<i>Wood</i>)	...	...							x	
88	<i>S. nitida</i> , (<i>Müller</i>)	...	...	x		x	x				
89	<i>S. prismatica</i> , (<i>Mont.</i>)	...	...					x	x		
90	<i>Solen ensis</i> , <i>Lin.</i>	...	...						
91	<i>Thracia villosiuscula</i> , (<i>Macg.</i>)	...	...						
92	<i>T. distorta</i> , (<i>Mont.</i>)	...	...						
93	<i>T. convexa</i> , (<i>IV. Wood</i>)	...	...				x			x	
94	<i>Cochlodesma prætenue</i> , (<i>Pulteney</i>)	...	...						

	Bukken and Kors Fiord.															Bergen Fiord.	Shetland.	Denmark.	Christiania.	Faroe Islands.	Iceland.	Greenland.	N.E. American.	Mediterranean.				
	11	12	13	14	15, 20, 26	16	17	18 and 25	19	21	22	23	24	27														
61																												
62	x	x							x			x			x	x	x	x	x	x	x	x	x	x	x	x	x	x
63															x	x	x	x	x	x	x	x	x	x	x	x	x	x
64		x													x	x	x	x	x	x	x	x	x	x	x	x	x	x
65	x					x	x	x		x	x		x															
66		x								x					x	x	x	x	x	x	x	x	x	x	x	x	x	x
67	x					x		x							x	x	x	x	x	x	x	x	x	x	x	x	x	x
68						x	x								x	x	x	x	x	x	x	x	x	x	x	x	x	x
69	x			x			x		x											x	x	x	x	x	x	x	x	x
70	x																											
71															x	x	x	x	x	x	x	x	x	x	x	x	x	x
72				x											x													
73		x																										
74		x																										
75				x		x	x								x	x	x	x	x	x	x	x	x	x	x	x	x	x
76													x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
77				x		x	x		x	x					x	x	x	x	x	x	x	x	x	x	x	x	x	x
78						x	x								x	x	x	x	x	x	x	x	x	x	x	x	x	x
79		x				x									x	x	x	x	x	x	x	x	x	x	x	x	x	x
80		x													x	x	x	x	x	x	x	x	x	x	x	x	x	x
81															x	x	x	x	x	x	x	x	x	x	x	x	x	x
82														x		x	x	x	x	x	x	x	x	x	x	x	x	x
83		x													x	x	x	x	x	x	x	x	x	x	x	x	x	x
84		x														B	x	x	x	x	x	x	x	x	x	x	x	x
85									x							B	x	x	x	x	x	x	x	x	x	x	x	x
86		x															x	x	x	x	x	x	x	x	x	x	x	x
87													x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
88			x			x							x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
89							x						x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
90		x													x	x	x	x	x	x	x	x	x	x	x	x	x	x
91							x		x	x					x	x	x	x	x	x	x	x	x	x	x	x	x	x
92						x									x	x	x	x	x	x	x	x	x	x	x	x	x	x
23							x								x	x	x	x	x	x	x	x	x	x	x	x	x	x
94						x							x		x	x	x	x	x	x	x	x	x	x	x	x	x	x

		Oster Fiord.							
		1 and 8	2	3	4	5	6	7	9 and 10
95	<i>Poromya granulata</i> , (<i>Nyst. & West.</i>) ...								
96	<i>Neæra abbreviata</i> , <i>Forbes</i> ...								
97	<i>N. obesa</i> , <i>Lovén</i> ...						x		
98	<i>N. jugosa</i> , <i>S. Wood</i> ...		x			x			
99	<i>N. costellata</i> , (<i>Deshayes</i>) ...	x							
100	<i>N. cuspidata</i> , (<i>Olivi</i>) ...								
101	<i>N. rostrata</i> , (<i>Speng.</i>) ...								
102	<i>Corbula gibba</i> , (<i>Olivi</i>) ...			x					x
103	var. <i>rosea</i> , <i>Brown</i> ...							x	
104	<i>Mya arenaria</i> , <i>Lin.</i> ...								
105	<i>M. truncata</i> , <i>Lin.</i> ...							x	
106	var. <i>Uddevalensis</i> , <i>Forbes</i> (fossil?)								
107	<i>Panopea plicata</i> , (<i>Mont.</i>) ...								
108	<i>Saxicava rugosa</i> , (<i>Lin.</i>) ...								
109	<i>Xylophaga dorsalis</i> , (<i>Turton</i>) ...					x	x		
Solenococonchia.									
110	<i>Dentalium entalis</i> , <i>Lin.</i> ...	x	x				x		x
111	var. <i>striolatum</i> , <i>Stimps</i> ...		x						x
112	var. <i>agile</i> , <i>M. Sars</i> ...								
113	<i>Siphonodentalium Lofotense</i> , <i>M. Sars</i> ...		x						x
114	<i>S. tetragonum</i> , (<i>Brocchi</i>) ...	x	x			x			x
115	<i>Cadulus subfusiformis</i> , (<i>M. Sars</i>) ...								
116	<i>C. propinquus</i> , <i>G. O. Sars</i> ...		x			x			x
Gasteropoda.									
117	<i>Chiton fascicularis</i> , <i>Lin.</i> ...								
118	<i>C. alveolus</i> , <i>M. Sars</i> ...	x							
119	<i>C. cinereus</i> , <i>Lin.</i> ...	x							
120	<i>C. albus</i> , <i>Lin.</i> ...								
121	<i>C. marginatus</i> , <i>Penn.</i> ...			x					
122	<i>C. ruber</i> , <i>Lowe</i> ...			x					
123	<i>C. lævis</i> , <i>Penn.</i> ...								
124	<i>C. marmoreus</i> , <i>Fab.</i> ...			x					

[illegible]

		Oster Fiord.							
		1 and 8	2	3	4	5	6	7	9 and 10
125	<i>Patella vulgata</i> , <i>Lin.</i> ...	...						
126	<i>Helcion pellucidum</i> , (<i>Lin.</i>) ...	...						
127	<i>Tectura testudinalis</i> , (<i>Müll.</i>)...	...							
128	<i>T. virginea</i> , (<i>Müll.</i>) ...	...		x				x	
129	<i>Pilidium fulvum</i> , (<i>Müll.</i>) ...	...	x				x		
130	<i>Lepeta cæca</i> , (<i>Müll.</i>) ...	...	x	x				x	
131	<i>Propilidium ancyloides</i> , (<i>Forbes</i>) ...	...						
132	<i>Puncturella noachina</i> , (<i>Lin.</i>) ...	...	x						
133	<i>Emarginula fissura</i> , (<i>Lin.</i>) ...	...				x			
134	<i>E. crassa</i> , <i>Sow.</i> ...	...						
135	<i>Capulus Hungaricus</i> , (<i>Lin.</i>) ...	...						
136	<i>Scissurella crispata</i> , <i>Flem.</i> ...	...	x	x					
137	<i>Cyclostrema basistriatum</i> , <i>Jeffreys</i> ...	...		x		x			
138	<i>C. trochoides</i> , <i>Jeffreys</i> ...	...						
139	<i>Mölleria lævigata</i> , <i>Jeffreys</i> ...	...						
140	<i>Trochus helycinus</i> , <i>Fab.</i> ...	...						
141	<i>T. Groelandicus</i> , <i>Chem.</i> ...	...						
142	<i>T. tumidus</i> , <i>Mont.</i> ...	...	x		x				
143	<i>T. cinerarius</i> , <i>Lin.</i> ...	...			x			x	
144	<i>T. millegranus</i> , <i>Phil.</i> ...	...	x						
145	<i>T. occidentalis</i> , <i>Migh.</i> ...	...						
146	<i>T. zizyphinus</i> , <i>Lin.</i> ...	...						
147	<i>Craspedotus limbatus</i> , (<i>Phil.</i>) ...	...						
148	<i>Lacuna divaricata</i> , (<i>Fab.</i>) ...	...			x		x		
149	<i>Littorina obtusata</i> , (<i>Lin.</i>) ...	...			x				
150	<i>L. littorea</i> , (<i>Lin.</i>) ...	...			x				
151	<i>L. rudis</i> , (<i>Mat.</i>) ...	...			x				
152	<i>Rissoa cimicoides</i> , <i>Forbes</i> ...	...						
153	<i>R. Jeffreysii</i> , <i>Waller</i> ...	...		x					
154	<i>R. abyssicola</i> , <i>Forbes</i> ...	...				x			
155	<i>R. punctura</i> , (<i>Mont.</i>) ...	...	x						
156	<i>R. Zetlandica</i> , (<i>Mont.</i>) ...	...						
157	<i>R. parva</i> , (<i>Da Costa</i>) ...	...						
158	var. <i>interrupta</i> , (<i>Adams</i>) ...	...						

[illegible]

		Oster Fiord.							
		1 and 8	2	3	4	5	6	7	9 and 10
159	<i>Rissoa inconspicua</i> , <i>Alder</i> ...	...						
160	<i>R. albella</i> , <i>Lovén</i> ...	...						
161	var. <i>Sarsii</i> , <i>Lovén</i> ...	...						
162	<i>R. membranacea</i> , (<i>Adams</i>) ...	...						
163	<i>R. violacea</i> , <i>Desm.</i> ...	...						
164	<i>R. semistriata</i> , (<i>Mont.</i>) ...	...						
165	<i>R. cingellus</i> , (<i>Mont.</i>) ...	...						
166	<i>R. striata</i> , (<i>Adams</i>)... ..	...						x	
167	<i>R. turgida</i> , <i>Jeffreys</i> ...	...		x					
168	<i>R. soluta</i> , <i>Phil.</i> ...	...							x
169	<i>Hydrobia ulvæ</i> var. <i>Barleei</i> , (<i>Jeffreys</i>) ...	...						
170	<i>Skenea planorbis</i> , (<i>Fab.</i>) ...	...	x						
171	<i>Cæcum glabrum</i> , (<i>Mont.</i>) ...	...						
172	<i>Turritella terebra</i> , (<i>Lin.</i>) ...	x			x				
173	<i>Læocochlis granosa</i> , (<i>S. Wood</i>)... ..	...						
174	<i>Aclis unica</i> , (<i>Mont.</i>) ...	...						
175	<i>A. Walleri</i> , <i>Jeffreys</i> ...	...						
176	var. <i>carinata</i> , <i>Norman</i> ...	...						
177	<i>A. ventrosa</i> var. <i>minor</i> , <i>Friele</i> ...	...						
178	<i>Chemnitzia rufescens</i> , <i>F. & H.</i> ...	...						
179	<i>C. rufa</i> var. <i>fulvocincta</i> , (<i>Thomp.</i>) ...	...	x						
180	<i>Odostomia interstincta</i> , (<i>Mont.</i>) ...	...					x		
181	<i>O. insculpta</i> , (<i>Mont.</i>) ...	...					x		
182	<i>O. spiralis</i> , (<i>Mont.</i>) ...	...						
183	<i>O. conoidea</i> , (<i>Brocchi</i>) ...	...		x					
184	<i>O. unidentata</i> , (<i>Mont.</i>) ...	x							
185	<i>O. turrita</i> , <i>Hanley</i> ...	x							
186	<i>O. rissoides</i> , <i>Hanley</i> ...	...					x		
187	<i>O. pallida</i> , (<i>Mont.</i>) ...	...						
188	<i>O. albella</i> , (<i>Lovén</i>)... ..	...						
189	<i>O. minima</i> , <i>Jeffreys</i> ...	...						
190	<i>O. eximia</i> , <i>Jeffreys</i> ...	...					x		
191	<i>Eulimella Scillæ</i> , (<i>Scacchi</i>) ...	...				x	x		
192	<i>E. acicula</i> , (<i>Phil.</i>) ...	...					x		

	Bergen Fiord.							Bukken and Kors Fiord.																							
	11	12	13	14	15, 20, 29	16	17	18 and 25	19	21	22	23	24	27	Shetland.	Denmark.	Christiania.	Faroe Islands.	Iceland.	Greenland.	N.E. American.	Mediterranean.									
159									x	x					x	x	x					x									
160	x									x	x				x	x	x					x									
161															x	x	x					x									
162															x	x	x					x									
163															x	x	x					x									
164															x	x	x					x									
165															x	x	x					x									
166															x	x	x					x									
167															x	x	x					x									
168															x	x	x					x									
169															x	x	x					x									
170															x	x	x					x									
171															x	x	x					x									
172															x	x	x					x									
173															x	x	x					x									
174															x	x	x					x									
175															x	x	x					x									
176															x	x	x					x									
177															x	x	x					x									
178															x	x	x					x									
179															x	x	x					x									
180	x														x	x	x					x									
181															x	x	x					x									
182	x														x	x	x					x									
183															x	x	x					x									
184															x	x	x					x									
185															x	x	x					x									
186															x	x	x					x									
187															x	x	x					x									
188															x	x	x					x									
189															x	x	x					x									
190															x	x	x					x									
191	x														x	x	x					x									
192															x	x	x					x									

		Oster Fiord.									
		1 and 8	2	3	4	5	6	7	9 and 10		
193	<i>Eulima intermedia</i> , <i>Cantr.</i>	...					x				
194	<i>E. distorta</i> , (<i>Desh.</i>)	...									
195	var. <i>gracilis</i> , <i>F. & H.</i>	...									
196	<i>E. stenostoma</i> , <i>Jeffreys</i>	...				x			x		
197	<i>E. bilineata</i> , <i>Alder</i>	...									
198	<i>Natica Alderi</i> , <i>Forbes</i>	...									
199	<i>N. Montagui</i> , <i>Forbes</i>	...	x								
200	<i>N. affinis</i> , (<i>Gmel.</i>)	...									
201	<i>N. Islandica</i> , (<i>Gmel.</i>)	...									
202	<i>Lamellaria perspicua</i> , (<i>Lin.</i>)	...									
203	<i>Velutina lævigata</i> , (<i>Penn.</i>)	...					x				
204	<i>Trichotropis borealis</i> , <i>Brod. & Sow.</i>	...									
205	<i>Aporrhais pes-pelecani</i> , (<i>Lin.</i>)	...			x						
206	<i>A. Serresianus</i> , (<i>Michaud</i>)	...									
207	<i>Cancellaria viridula</i> , (<i>Fab.</i>)	...									
208	<i>Cerethium metula</i> , <i>Lovén</i>	...									
209	<i>C. reticulatum</i> , (<i>Da Costa</i>)	...									
210	<i>Triforis perversa</i> , (<i>Lin.</i>)	...	x								
211	<i>Cerethiopsis costulata</i> , (<i>Möll.</i>)	...									
212	<i>Purpura lapillus</i> , (<i>Lin.</i>)	...									
213	<i>Buccinum undatum</i> , <i>Lin.</i>	...			x						
214	<i>B. Humphreysianum</i> , <i>Benn.</i>	...									
215	<i>Trophon Bervicensis</i> , <i>Johnst.</i>	...									
216	<i>T. clathratus</i> , (<i>Lin.</i>)	...									
217	var. <i>Gunneri</i> , (<i>Lovén</i>)	...									
218	var. <i>truncatus</i> , (<i>Ström.</i>)	...									
219	<i>Fusus gracilis</i> , (<i>Da Costa</i>)	...									
220	<i>Nassa reticulata</i> , (<i>Lin.</i>)	...						x			
221	<i>N. incrassata</i> , (<i>Ström.</i>)	...						x			
222	<i>Columbella rosacea</i> , (<i>Gould</i>)	...									
223	<i>C. nana</i> , (<i>Lovén</i>)	...									
224	<i>Metzgeria alba</i> , (<i>Jeffreys</i>)	...									
225	<i>Taranis Mörcchi</i> , (<i>Malm.</i>)	...	x			x	x		x		
226	<i>Pleurotoma nebula</i> , (<i>Mont.</i>)	...									

[illegible]

		Oster Fiord.							
		1 and 8	2	3	4	5	6	7	9 and 10
227	<i>Pleurotoma carinata</i> , <i>Bivona</i> ...	...						
228	<i>P. nivalis</i> , (<i>Lovén</i>) ...	...						
229	<i>P. turricola</i> , (<i>Mont.</i>) ...	...						
230	var. <i>scalaris</i> , (<i>Möll.</i>) ...	...						
231	var. <i>rosea</i> , (<i>Sars</i>) ...	...						
232	<i>P. tenuicostata</i> , <i>Sars</i> ...	...						
233	<i>P. bicarinata</i> var. <i>violacea</i> , (<i>M. & Ad.</i>)...	...							x
234	var. <i>cylindracea</i> , (<i>Möll.</i>) ...	...						
235	<i>P. Trevelyana</i> , (<i>Turt.</i>) ...	...						
236	<i>Defrancia linearis</i> , (<i>Mont.</i>) ...	...						x	
237	<i>D. Leufroyi</i> , (<i>Michaud</i>) ...	...						
238	<i>D. purpurea</i> , (<i>Mont.</i>) ...	...						
239	<i>Scalaria Trevelyana</i> , <i>Leach</i> ...	...						
240	<i>S. communis</i> , <i>Lam.</i> ...	...						
241	<i>S. Groenlandica</i> , (<i>Chem.</i>) ...	...						
242	<i>Cypræa Europæa</i> , <i>Mont.</i> ...	...						
243	<i>Cylichna alba</i> , (<i>Brown</i>) ...	...	x	x					
244	<i>C. cylindracea</i> , (<i>Penn.</i>) ...	...					x	x	
245	<i>C. umbilicata</i> , (<i>Mont.</i>) ...	...						
246	<i>C. nitidula</i> , <i>Lovén</i> ...	...	x	x					
247	<i>Utriculopsis globosa</i> , (<i>Lovén</i>) ...	...	x	x	x				
248	<i>Volvula acuminata</i> , (<i>Brug.</i>) ...	...				x			
249	<i>Utriculus hyalinus</i> , (<i>Turt.</i>) ...	...	x		x				
250	<i>U. expansus</i> , <i>Jeffreys</i> ...	...	x	x					
251	<i>U. truncatulus</i> , (<i>Brug.</i>) ...	...						
252	<i>U. mammillatus</i> , (<i>Phil.</i>) ...	...						
253	<i>Akera bullata</i> , <i>Müll.</i> ...	...						
254	<i>Actæon tornatilis</i> , (<i>Lin.</i>) ...	...						
255	<i>Bulla utriculus</i> , <i>Brocchi</i> ...	...						
256	<i>Scaphander lignarius</i> , (<i>Lin.</i>) ...	...						
257	<i>S. puncto-striatus</i> , (<i>M. & Ad.</i>) ...	...							x
258	<i>Philine scabra</i> , <i>Müll.</i> ...	...	x					x	
259	<i>P. quadrata</i> , <i>S. Wood</i> ...	...		x		x			
260	<i>P. punctata</i> , <i>Clark</i> ...	...						
Pteropoda.									
261	<i>Spirialis retroversus</i> , (<i>Flem.</i>) ...	...						
Total ...		...	50	31	14	25	31	25	20
									24

[illegible]

ADDITIONAL MOLLUSCA FOUND BY FRIELE, HANSEN, M. SARS, KOREN, & DANIELSEN IN THE BERGEN DISTRICT, AND THEIR DISTRIBUTION.*

	Bergen.	Shetland.	Denmark.	Christiania.	Faroe Islands.	Iceland.	Greenland.	N.E. American	Mediterranean
<i>Brought forward.....</i>	261	207	134	196	69	69	67	70	171
Bergen Mollusca.									
<i>Terebratula septata</i> , <i>Phil.</i>	×							
<i>Dacrydium vitreum</i> , (<i>Möll.</i>)								
<i>Modiolaria nigra</i> , (<i>Gray</i>)	×	×		×	×	×	×	
<i>M. discors</i> , (<i>Lin.</i>)	×	×	×		×	×	×	
<i>M. marmorata</i> , (<i>Forbes</i>)	×	×	×			×	×	
<i>Arca obliqua</i> , <i>Phil.</i>	×				×	×	×	
<i>Pecchiolia abyssicola</i> , <i>M. Sars</i>						×		
<i>Montacuta substriata</i> , (<i>Mont.</i>)	×	×	×				×	
<i>Lepton nitidum</i> , <i>Turt.</i>	×	×	×				×	
<i>Cardium exiguum</i> , <i>Gmel.</i>	×	×					×	
? <i>Isocardia Cor.</i> , (<i>Lin.</i>)	×	×	×				×	
<i>Astarte arctica</i> , (<i>Gray</i>)		×	×	×	×	×		
<i>Tapes aureus</i> , (<i>Gmel.</i>)	B	×	×	×			×	
<i>T. virgineus</i> , (<i>Lin.</i>)	×	×	×	×			×	
<i>Lucinopsis undata</i> , (<i>Penn.</i>)	×	×	×				×	
<i>Psammobia tellinella</i> , <i>Lam.</i>	×	×		×	?			
<i>Tellina crassa</i> , (<i>Gmel.</i>)	×	×						
<i>T. fabula</i> , <i>Gronov.</i>	×	×					×	
<i>T. tenuis</i> , <i>Da Costa</i>	×	×	×					
<i>T. pusilla</i> , <i>Phil.</i>	×	×	×	×			×	
<i>Macra subtruncata</i> , <i>Da Costa</i>	×	×	×				×	
<i>Lutraria elliptica</i> , <i>Lam.</i>	×						×	
<i>Solen siliqua</i> , <i>Lin.</i>	×	×		×			×	

* The shelled mollusca are taken from Friele, *Översigt over de i Bergens Omegn forekommende skaldækte Mollusker* (Chr. Videns-Selsk. Forhand. 1873), and *Bidrag til Vestlandets Molluskfauna* (Chr. Videns-Selsk. Forhand. 1875, p. 57), and Dunker and Metzger *Zoologische Ergebnisse der Nordseefahrt 1872* (1873), p. 229. The Nudibranchiata are from Friele and Hansen, *Bidrag til Kundskaben om de norske Nudibranchier* (Chr. Videns-Selsk. Forhand. 1875 p. 69).

	Shetland.	Denmark.	Christiania.	Faroe Islands.	Iceland.	Greenland.	N.F. American.	Mediterranean.
Solen pellucidus, <i>Penn.</i>	x	x	x					x
Lyonsia Norvegica, (<i>Chem.</i>)	x	x	x					x
L. arenosa (<i>Möll.</i>)			x			x	x	
Thracia truncata, <i>Brown</i>			?	x	x	x	x	
Sphenia Binghami, <i>Turt.</i>	B		x					x
Saxicava Norvegica, (<i>Speng.</i>)	x					x	x	
Pholas crispata, <i>L.</i>					x	x	x	
Teredo Norvegica, <i>Speng.</i>	x	x	x				x	x
T. megotara, <i>Hanley</i>	x	x				?	x	
Chiton Hanleyi, <i>Bean</i>	x		x	x			?	x
Tylodina Dübeni, <i>Lövén</i>		x						
Trochus affinis, <i>Jeff.</i>								
Lacuna pallidula, (<i>Da Costa</i>)	x	x		x	x	x	x	
Rissoa calathus, <i>F. & H.</i>	B							x
R. reticulata, (<i>Mont.</i>)	x		x					x
Jeffreysia diaphana, <i>Alder</i>	x							x
J. opalina, (<i>Jeff.</i>)	x							x
Homalogyra atomus, (<i>Phil.</i>)	x	x	x					x
Aclis supranitida, (<i>S. Wood.</i>)	x							x
Odostomia acuta, <i>Jeff.</i>	x	x	x					x
O. clavula, (<i>Lövén</i>)	x	x	x					x
? O. Warreni, (<i>Thomp.</i>)	x	x	x					x
O. diaphana, <i>Jeff.</i>	x							x
Chemnitzia indistincta, (<i>Mont.</i>)	x		x					x
Stylifer Turtoni, <i>Brod.</i>	x	x	x					x
Eulima polita, (<i>L.</i>)	x	x	x					x
Natica Greenlandica, <i>Beck.</i>	x	x	x			x	x	
Lamellaria latens, <i>Müll.</i>								
Velutina plicatilis, (<i>Müll.</i>)	x	x	x	x	x	x		
Cerithiopsis tubercularis, <i>Mont.</i>	x						x	x
Trophon craticulatus, (<i>Fab.</i>)					x	x	x	
Fusus Islandicus, <i>Chem.</i>	x			x	x	x	?	
F. Sarsii, <i>Jeff.</i>								
F. propinquus, <i>Alder</i>	x	x				x	x	
F. antiquus, (<i>L.</i>)	x	x						
F. fenestratus, <i>Turt.</i>	B					x		

						Shetland.	Denmark.	Christiania.	Faroe Islands.	Iceland.	Greenland.	N.E. American.	Mediterranean.
<i>Defrancia teres</i> , Forbes	...	...	...	...	x								
<i>D. reticulata</i> , (Renier)	...	...	...	...	x								
<i>Pleurotoma costata</i> , (Don)	...	...	...	...	x	x	x						
<i>P. attenuata</i> , Mont.)	...	...	...	...	B	x	x						
<i>Scalaria Turtonæ</i> , (Turton)	...	...	...	...	B	x	x						
<i>Philine aperta</i> , (L.)	...	...	...	...	x	x	x						
<i>P. lima</i> , Brown	...	...	...	...			x					x	
<i>Aplysia punctata</i> , Cuv.	...	...	...	...	x								x
<i>Doris tuberculata</i> , Cuv.	...	...	...	...	x	x	x					x	
<i>D. obvelata</i> , Müll.	...	...	...	...				x					
<i>D. Zetlandica</i> , A. & H.	...	...	...	...	x								
<i>D. bilamellata</i> , L.	...	...	...	...	x	?				x		x	
<i>D. muricata</i> , Müll.	...	...	...	...	?	x	x						
<i>D. Lovéni</i> , A. & H.	...	...	...	...	B			?					
<i>D. pilosa</i> , Müll.	...	...	...	...	x	x	x	x	x				
<i>Goniodoris Danielsseni</i> , Friele & Hans.	...	...	...	...	x	x	x	x	x				
<i>Ancula cristata</i> , (Alder)	...	...	...	...	x	x		x					
<i>Polycera quadrilineata</i> , (Müll.)	...	...	...	...	x	x	x						
<i>P. ocellata</i> , A. & H.	...	...	...	...	x	x			x				
<i>Triopa claviger</i> , (Müll.)	...	...	...	...	x								
<i>Dendronotus arborescens</i> , (Müll.)	...	...	...	...	x	x		x	x			x	
<i>Doto coronata</i> , (Gmel.)	...	...	...	...	x	x	x					x	
<i>D. crassicornis</i> , M. Sars	...	...	...	...			x						
<i>Eolis papillosa</i> , (L.)	...	...	...	...	x	x		x	x			x	
<i>E. auriculata</i> , Müll.	...	...	...	...					
<i>E. rufibranchialis</i> , Johnst.	...	...	...	...	x	x						x	
<i>E. verrucosa</i> , M. Sars	...	...	...	...					
? <i>E. olivacea</i> , A. & H.	...	...	...	...	x								
<i>E. flavescens</i> , Friele & Hans.	...	...	...	...					
<i>E. despecta</i> , (Johnst.)	...	...	...	...	x							x	
<i>Elysia viridis</i> , (Mont.)	...	...	...	...	B	x	x						
<i>Acteonia corrugata</i> , A. & H.	...	...	...	...	B								
<i>Limapontia nigra</i> , Johnst.	...	...	...	...	x	x							
	353	272	179	234	84	86	83	94	212				

The foregoing table will, with respect to the majority of the species which it contains, supply sufficient information. I shall in the following notes refer to only a few of the mollusca which are found in the British Seas, and described in Jeffreys' "British Conchology," but give references—always to a good figure when I know one—for such species as are not so well known to British conchologists.

3. *Argiope cistellula*, (S. Wood). Found on the south side of Kors Fiord, off the bluff cliffs just west of the islet marked in the chart "Skaathl." The strata of the rocks here are almost perpendicular, and dip, with a slight northerly or outward slope, right down into the abyss, and thus within 100–200 yards of the shore the dredge is dropped in 180 fathoms (Station 23). From this position the dredge was drawn shoreward, and the boat was sometimes moored to the rocks as the dredge was being hauled up the perpendicular slope of the submerged cliff. This slope forms a magnificent preserve for sponges, &c.; while the debris at the bottom is very rich in small and rare mollusca, as will be evidenced by a reference to column 23. Among these small, rare mollusca dead but perfect specimens of *Argiope cistellula* are not unfrequent.
11. *Pecten varius*, (Lin.) At low water and Laminarian Zone Islet of Bukken. The occurrence of this *Pecten* on the Norwegian coast is of much interest, since in the British Seas the typical form is not found anywhere on the Scotch coast, though the species (or "variety," Jeffreys) *P. nivea* is Hebridean; and Jeffreys says that an intermediate variety is to be met with at Jura. The typical dark-colored *P. varius*, such as is found at Bukken, is however with us a southern form. Bukken is its most northern habitat.
12. *Pecten aratus*, (Gmelin).
Pecten sulcatus, Müller, Zool. Dan. Prod., No. 2995 (not *Pecten sulcatus*, Chem.).

Ostrea arata, (Gmelin). Lin. Syst. Nat., ed. xiii, p. 3327.

Pecten sulcatus, Lovén. Index Moll. Scand. (in Kong. Vet. Akad. Forh., 1846, p. 184).

Pecten aratus, Jeffreys. Brit. Conchol., ii, p. 6 ; v. p. 167 pl. xcix., fig. 5 (figura bona).

This lovely little shell is distributed throughout the district.

18. **Pecten vitreus**, (Chemn.)

Pallium vitreus, Chemnitz. Conch. Cab., vii, p. 335, pl. lxvii, fig. 367a.

Pecten vitreus, Lovén. Index Moll. Scand. (in Kong. Vet. Akad. Forh., 1846, p. 185).

Pecten vitreus, Jeff. Brit. Conchol., v., p. 168, pl. xcix., fig. 6.

Rarer in the district examined than the next, which is undoubtedly only a smooth variety of *P. vitreus*.

19. **Pecten vitreus** var. **abyssorum**, Lovén, MS.

Pecten abyssorum, M. Sars. Videns-Selsk. Forhand., 1868, p. 256 (name only, no description), Bidrag til Kundskab. om Christianiafjordens Fauna, 1870, pt. ii., p. 99.

Found—Oster Fiord, Bergen Fiord, north of Bukken, Kors Fiord, in 80—400 fathoms.

20. **Pecten Hoskynsi**, Forbes.

Pecten Hoskynsi, Forbes. Brit. Assoc. Rep., 1843 (1844), p. 188.

Pecten antiquatus, Philippi. Enum. Moll. Sicil., ii, p. 61, pl. xvi., fig. 5 (described and figured from left valve).

Pecten fimbriatus, Philippi. Enum. Moll. Sicil., ii, p. 60, pl. xvi., fig. 6 (described and figured from right valve).

Pecten imbrifer, Lovén. Index Moll. Scand. (in Kong. Vet. Akad. Forhand., 1846, p. 185).

Pecten mammillatus, M. Sars. Videns-Selsk. Forhand., 1858, p. 13 (name only, no description).

Pecten Hoskynsi, Wyville Thomson. "Depths of the Sea," p. 465 (figura optima).

In 80—180 fathoms south side of Kors Fiord, and to the north of Bukken, off Slettin. The peculiar character of the vaulted, cup-like scales at once serves to distinguish *P. Hoskynsi* from its allies. The specimens found near Bukken were small, but Herr Friele showed me examples taken by the Norwegian Expedition last year in the Jan Mayen Seas which were very much larger. One of these (far from the largest) which he kindly gave me, is 18 millimetres from side to side. In these larger specimens the vaulted scales are not apparent, but the position they would occupy is indicated by ripple-like undulations in the concentric striæ. The Sicilian fossils *Pecten antiquatus* and *P. fimbriatus* of Philippi, appear to be founded on the left and right valve of *P. Hoskynsi* respectively. The left valve shows no sign of the vesicular, vaulted scales, but is elegantly sculptured with very regular and distinct concentric striæ.

23. *Lima excavata*, (J. C. Fab.)

Ostrea excavata, Chem. Conchol. vii., p. 355, pl. lxxviii., fig. 654.

Lima excavata, Reeve. Conchol. Iconica, "Lima," 1872, pl. l., fig. 2.

A full-grown, living specimen of this grand shell taken at Station 23; at the other stations marked in the table only single but quite fresh valves were procured. The chief locality for the species is the Hardanger Fiord.

28. *Lima crassa*, Forbes.

Lima crassa, Forbes.

Limea Sarsii, Lovén. Index Moll. Scand. (in Kong. Vet. Akad. Forhand., 1846, p. 186).

Lima Sarsii, Jeffreys. Brit. Conchol., ii., p. 78, and v., p. 169, pl. xxv., fig. 1.

Lima Sarsii, Reeve. Conchol. Icon., "Lima," 1872, pl. v., fig. 2c.

At Station 15, but especially at 19, single valves were abundant, but only a few small living specimens were found. This little bivalve seems to be destroyed wholesale by a univalve enemy, for nearly half of the valves found had been pierced by a Gasteropod, perhaps by the smaller *Natica* (*Alderi*, *Montagui*, and *affinis*) which are abundant in the same locality.

32. *Crenella decussata*, (Mont.) Only a single living specimen occurred, south side of Kors Fiord, in 20—30 fathoms.

34. *Nucula tumidula*, Malm.

Nucula tumidula, Malm. Scand. Naturf. Forh., viii., 1860, p. 621.

Nucula pumila, Asbjørnsen, MS., M. Sars, Videns-Selsk. Forhand, 1868, p. 256.

Throughout the district in 20?—400 fathoms on a fine mud bottom. In "British Conchology" Jeffreys mistakingly gave Malm's species as a variety of *nucleus* and recorded it from Shetland; he has more recently become acquainted with the true *N. tumidula* (not yet found in our seas), and regards it as a good species (*vide* "Norwegian Mollusca," Ann. Nat. Hist., June 1870, p. 3, separate copy).

37. *Leda pernula*, (Müller).

Arca pernula, Müller. Beschäftigungen naturf. Freunde, iv., 1779, p. 57 (*fide* Lovén).

Leda pernula, S. Wood. Crag Mollusca, pt. ii., p. 93, pl. x., fig. 13 a-c.

Leda pernula, Reeve. Conchol. Icon., "Leda," 1871, pl. ii., fig. 5.

At Station 16, near the entrance of Fane Fiord, in 50—120 fathoms were dredged two dead valves. These corresponded so closely in appearance with the condition of the

valves dredged by Mr. Jeffreys and myself in St. Magnus' Bay, Shetland (*vide* Brit. Assoc. Report, 1867, p. 432) that I concluded if the latter were fossil the former must also be regarded as such. A few days later, however, *Leda pernula* was found living in great profusion at Station 24. I venture to predict that the day will come when the species will be found similarly living in the Shetland Sea.

38. *Yoldia arctica*, (Gray).

Nucula arctica, Gray. "Supplement to the Appendix to Parry's First Voyage," 1819-20, p. 241 (1824) (not *N. arctica* of Möller, Mörch, Sars earlier papers, nor of Broderip and Sowerby, *fide* Torell).

Nucula truncata, Brown. Illust. Conch. Gt. Brit., ed. i. (1827), pl. xxv., fig. 19, ed. ii. (1844), p. 84, pl. xxxiii., fig. 19.

Arca glacialis, W. Wood, and of Hisinger; *Nuculana glacialis*, Mörch; *Yoldia glacialis*, Gray; (but not *Arca glacialis*, Gray, "Suppl. Parry's Voyage," which is a large Arctic form of *Arca obliqua*, Philippi, over which name it has precedence).

Nucula Portlandica, Reeve. Account of shells collected in Belcher's Arctic Voyage, 1855, p. 396, pl. xxxiii., fig. 3a-b. (? *N. Portlandica*, Hitchcock).

Nucula siliqua, Reeve, l.c., pl. xxxiii., fig. 1.

Yoldia Arctica, O. Torell. Spetsbergen Mollusca, 1859, p. 25.

Yoldia Arctica, M. Sars. Norge forekom. fossile Dyrelevninger fra Quartærperioden, 1865, p. 37, pl. ii., fig. 59-66, pl. iii., fig. 67-74 (figuræ bonæ).

Yoldia glacialis, Reeve. Conchol. Iconica, "Yoldia," 1871, pl. iii., fig. 12a-b.

Leda arctica, Jeffreys. Ann. Nat. Hist., ser. iv., vol. xx. (1877), p. 238.

There has been the greatest confusion with respect to the synonymy of this species, and I have therefore given it rather fully. I dredged a single valve at Station 24; the epidermis in a great measure remains on the shell, which is in very much the same condition as are the valves of *Leda pernula* already mentioned as from Station 16. *Yoldia arctica* has however not yet been found living as far south as Bergen, and therefore it will certainly for the present be safer to regard this valve as fossil. Spirit-preserved specimens are now before me which Captain Wiggins dredged on "the west side of White Island, Kara Sea," when on his interesting voyage, in 1876, to the mouth of the Yenisei.

39. *Yoldia tenuis*, (Philippi).

Nucula tenuis, Philippi. Enum. Mollus. Sicil., i., p. 65, pl. v., fig. 9.

Leda pygmæa, Jeffreys. Brit. Conchol., ii., p. 154, pl. xxix., fig. 5.

This shell is well known to conchologists as *Leda pygmæa*, but Jeffreys has recently stated that it is not Münster's species and has therefore adopted Philippi's name ('Valorous' Report, Proc. Royal Soc., xxv., 1876, p. 191). Besides the typical form, which is generally diffused throughout the district examined, a variety was met with in deeper water which seems almost intermediate between *Yoldia tenuis* and *Yoldia abyssicola*, Torell (Spetsbergen Mollusca, p. 29, pl. i., fig. 4a-b).

40. *Yoldia lucida*, Lovén.

Yoldia lucida, Lovén. Index Mollus. Scand., 1845, p. 188.

Leda lucida, Jeffreys. Brit. Conchol., v., p. 173, pl. c, fig. 1.

Yoldia lucida, Reeve. Conchol. Icon., "Yoldia," 1871, pl. iv., fig. 17.

Common in deep water down to 400 fathoms, on a muddy bottom.

41. *Yoldia frigida*, Torell.

Yoldia frigida, Torell. Spetsbergen Mollusker, p. 28, pl. i., fig. 3.

Yoldia nana, M. Sars. Fossile Dyrelevninger fra Quartærperioden, 1865, p. 99, pl. iv., fig. 118—120, Bidrag til Kunds. Christianiafjordens Fauna, pt. ii., 1870, p. 98.

Yoldia frigida, Reeve. Conchol. Iconica. "Yoldia," 1871, pl. iv., fig. 16 (bad copy from Torell).

Found in several of the deepest dredgings, but numerically very scarce. Jeffreys has recorded it from Japan.

42. *Yoldia Messanensis*, (Sequenza, MS.)

Leda acuminata, Jeffreys. Ann. Nat. Hist., July 1870, p. 5 (not *Leda acuminata*, Von Buch).

Leda Messanensis, Sequenza, MS., Jeffrey's 'Valorous' Report, Proc. Royal Soc., 1876, p. 190.

Described in 1870 from the Mediterranean. This well-marked species has since been found in the bed of the Atlantic by the 'Porcupine,' 'Valorous,' and 'Challenger' Expeditions, and is now added to the Norwegian Fauna in 200—400 fathoms. The three stations in which it was procured and where it was very rare are all in Oster Fiord and close together. I believe Herr Friele had previously found it in this locality.

43 *Malletia obtusa*, (M. Sars).

Yoldia abyssicola, M. Sars. Chr. Videns-Selsk. Forhand., 1858, p. 86 (not *Yoldia abyssicola*, Torell).

Yoldia obtusa, M. Sars. Chr. Videns-Selsk. Forhand., 1868, p. 256.

Yoldia obtusa, G. O. Sars. "Some remarkable forms of Animal Life from the great Deep's off the Norwegian Coast," pt. i., 1872, p. 23, pl. iii, fig. 16—20.

Malletia obtusa, Mörch. Skand. Naturforskermöde, 1873, p. 375.

Malletia obtusa, Metzger. Zoologische Ergebnisse der Nordseefahrt, 1874, p. 233.

The district examined by me is just that from which the known examples of this fine shell have chiefly come. Here it was first found by Dr. Koren, as mentioned in Sars' description, and here, too, the specimens recorded by Metzger were dredged. It only inhabits the deepest water, 200—400 f., on a fine mud bottom, and in such localities was procured in Oster Fiord, Kors Fiord, and the Bukken district.

44. *Limopsis minuta*, Philippi.

Pentunculus (Limopsis) minutus, Philippi. Enum. Moll. Sicil., 1836, p. 63, pl. v., fig. 3.

Limopsis borealis, Jeffreys. Brit. Conch., v., p. 174, pl. c, fig. 3.

Living on a muddy bottom, in 100—200 fathoms, in Kors Fiord.

46. *Arca nodulosa*, Müller.

Arca nodulosa, Jeffreys. Brit. Conch., iii., p. 180; v., p. 176, pl. c, fig. 2.

Rough ground in Bergen Fiord and Leerosin, 40—100 f., on dead shells and stones; nestling, wherever it can, in a crevice.

50. *Decipula ovata*, Jeffreys.

Decipula ovata, Jeffreys. MS., Friele, Bidrag til Vestlandets Molluskfauna (in Chr. Videns-Selsk. Forhand., 1875, p. 57).

Mr. Jeffreys and myself each found a single specimen of this extremely rare and interesting bivalve in Oster Fiord, his example being met with in 100—200 f. Station 2, and mine in 400 f. Station 9. It was in Oster Fiord also that my friend Herr Herman Friele obtained the first Norwegian specimen. *Decipula ovata* first became known to Dr. Jeffreys among the products of the 'Porcupine' Expedition of 1869.

56. *Axinus flexuosus*, var. *Sarsii*, Philippi.

Axinus Sarsii, Philippi. M. Sars, Reise i Lofoten og Finmarken (in Mag. for Naturvidenskabern, 1850, p. 48).

Cryptodon Sarsii, M. Sars. Malacozoologiske Jagttagelsen (in Videns-Selsk. Forhand, 1864, p. 3, pl. iv. and v.)

The fine *Axinus Sarsii* was much more abundant in these dredgings than *A. flexuosus*, and attains much greater size, especially at Stations 7 and 24. I am unable to satisfy myself that it is more than a variety of *A. flexuosus*, but it is not a variety which results either from softness of ground or depth of water, as suggested by Jeffreys on Malms' authority (Brit. Conchol., ii., p. 251), for my finest specimens are from very shallow water and the softest possible ground.

57. *Axinus Croulinensis*, Jeffreys.

Axinus pusillus, M. Sars. Chr. Videns-Selsk. Forhand., 1868, p. 257 (name only, no description).

Rare; Oster Fiord; north of Bukken; Kors Fiord.

58. *Axinus eumyarius*, M. Sars.

Axinus eumyarius, M. Sars. Bidrag til kunds. om Chr. Fauna, pt. ii., 1870, p. 87, pl. xii., fig. 7—10.

This very small but strongly characterized species is at once known from the young of its congeners by its long and conspicuous muscular impressions, which appear shining as opaque, white lines through the shell. Muddy bottom, 100—400 fathoms.

65. *Cardium minimum*, Phil. A shell never absent from the greater depths, of which it is markedly characteristic.

67. *Kelliella abyssicola*, M. Sars.

Kelliella abyssicola, M. Sars. Bidrag til kunds. om Chr. Fauna, pt. ii., 1870, p. 89, pl. xii., fig. 11—15 and pl. iii.

Isocardia Cor (young), Jeffreys. Norwegian Mollusca (in Ann. Nat. Hist., June 1870, p. 4, separate copy).

This little shell was abundant everywhere on the mud in great depths, but I did not see a sign of *Isocardia Cor.* Jeffreys is of opinion that it is the young of that species; but even suppose it be that the "adults bury themselves in the sand beyond the reach of a light dredge," surely we should expect to find an occasional specimen of intermediate growth in places where the supposed young swarm; yet out of the thousands that passed under my eye in the various localities noted in the table, I was unable to find one that exceeded 3 mill. in length. Moreover, M. Sars has pointed out marked difference in the animals. Regarding therefore the question whether these little shells are adult or not, as a question at least still "sub judicibus," to avoid mistakes I employ here Sars' name.

71. *Astarte crenata*, Gray.

Astarte crenata, Gray. Supplem. Parry's First Voyage.

Astarte crebricostata, McAndrew and Forbes. Ann. Nat. Hist., xix., 1847, p. 96, pl. ix., fig. 4.

A single valve dredged at Station 24 to the N.E. of Bukken. It is recent looking, more so than those valves dredged by Mr. McAndrew among the Hebrides, which are in my collection, but like *Yoldia arctica*, which was found with it, must be presumed to be fossil. Even as a fossil its occurrence is interesting, inasmuch as it is not to be found among the shells enumerated by M. Sars in his admirable "Om de i norske forekommende fossile Derelevninger fra Quartærperioden," 1865.

72. *Circe minima*, (Mont.)

One living specimen, south side of Kors Fiord. It is extremely rare as a Norwegian mollusk; I believe that the only previous instance of its occurrence was when M. Sars dredged a single perfect specimen and a few valves near Bergen, which are now in the Christiania Museum. I was

glad to have dredged a mollusk of which no Norwegian example was in the collection of my kind friend Herr Herman Friele, and to have the pleasure of placing it there.

80. **Tapes decussatus**, (Lin.) Living at low water, Bukken; its most northern habitat, I believe.

82. **Tellina calcarea**, Chem.

Tellina calcarea, Chem. Conch., vi., pl. xiii., fig. 136.

Tellina proxima, Forbes & Hanley. Brit. Moll., i., p. 307, pl. xxi., fig. 1.

Abundant in a narrow channel to the east of Bernestangen, Oster Fiord, in about 10 fathoms, and in a locality of exactly similar character near Bukken.

93. **Thracia convexa**, (W. Wood). Several perfect young specimens and full-grown single valves both at Oster Fiord and near Bukken, shallow water.

95. **Poromya granulata**, (Nyst. & West.) Leerosin and off Børnestangen, Sartoro, in 40—110 fathoms, the specimens of gigantic size as compared with those from the Hebrides, measuring fully half-an-inch (13 mill.) long.

96. **Neæra abbreviata**, Forbes. Local; only to the N. and N.E. of Bukken. This is another species which attains much larger size than in our own seas, reaching 10 mill. in length.

97. **Neæra obesa**, Lovén.

Neæra obesa, Lovén. Index. Moll. Scand. (in Kong. Vit. Akad. Forhand, 1846, p. 202).

Mr. Jeffreys found the only specimen procured by us at Oster Fiord, Station 6, 50—100 fathoms.

98. **Neæra jugosa**, S. Wood.

Neæra jugosa, S. Wood. Mon. Crag Mollusca, 1856 p. 272, pl. xxx., fig. 7a—b.

Neæra lamellosa, M. Sars. Chr. Videns-Selsk. Forhand, 1868, p. 257 (name only, no description).

Generally distributed in suitable localities in 100—400 f. throughout the district examined. Younger specimens of this small *Neæra* are easily recognised by their elevated concentric lamellæ, but as the shell increases in size the lamellæ become more and more obscure, and it then approaches very near to *N. obesa*, Lovén.

101. *Neæra rostrata*, (Speng.)

Neæra rostrata, Jeffreys. Brit. Conchol., iii., p. 51, v., 191, pl. xlix., fig. 4.

Fine specimens taken in the neighbourhood of Bukken. It is somewhat remarkable that the six species of *Neæra* found by me in the neighbourhood of Bukken are the same six forms which are given in the most recent list of Mediterranean Mollusca, that by Marquess Monterosato ("Nuova Revista delle Conchyglie Mediterranee, 1875), as the only members of the Genus inhabiting that sea; yet two of these are nevertheless altogether absent from the British Seas, and the remaining four extremely local and rare. The fact of their absence or scarcity must be explained, I think, by the few spots in the British Seas where the conditions favorable to, if not necessary for, their existence, are fulfilled; namely, a depth of water exceeding 50 fathoms and a bottom of very fine mud. Loch Fyne is almost the only spot in our seas which fulfils these conditions. Around Shetland there is sufficient depth of water, but the bottom is sometimes coarse, more generally a grit (broken shell and Foraminifera), but very rarely, if ever, a fine mud. Indeed I do not recall to mind an impalpable mud as occurring anywhere in the open sea round Shetland.

107. *Panopea plicata*, (Mont.) Living specimens, south side of Kors Fiord, 200—300 fathoms, Station 13.

108. *Saxicava rugosa*, (Lin.) Living specimens found are small; but at Bukken fossil valves of enormous size and thickness are washed out of a deposit on the shore, together with *Mya truncata* var. *Uddevalensis*, &c. These valves correspond with those figured by Middendorff from the Siberian Seas (*Saxicava pholadis*, Middendorff *Siberische Reise*, Band, ii. (1851), p. 253, pl. xxiv., fig. 1—7).

110. *Dentalium entalis*, Lin.

111. *Dentalium entalis* var. *striolatum*, Stimps.

Dentalium striolatum, Stimpson. *Proc. Boston Nat. Hist. Soc.*, Oct. 1851; *Shells of New England*, 1851, p. 28.

Dentalium abyssorum, M. Sars. *Foss. Dyrelevninger fra Quartærperioden*, 1865, p. 42, pl. iii., fig. 100—106.

Dentalium abyssorum, Jeffreys. *Brit. Conchol.*, iii., p. 197, pl. ci., fig. 1.

112. *Dentalium abyssorum* var. *agile*, M. Sars.

Dentalium incertum, Philippi. *Fauna Molluscorum regni utriusque Siciliæ*, ii., p. 207 (fide Jeffreys, but not *D. incertum*, Deshayes).

Dentalium agile, M. Sars. G. O. Sars' "Remarkable forms of Animal Life from the great Deeps off the Norwegian Coast," i. (1872), p. 31, pl. iii., fig. 4—15.

I cannot satisfy myself that the differences which separate *Dentalium abyssorum* and *D. agile* of Sars from *D. entalis*, are anything more than varietal, though doubtless many other so called species of *Dentalium* have been established on similarly slight modifications. *D. abyssorum* appears to be a deep-water, striated form of *D. entalis*, to which it is united by every step in gradation of the amount of sculpture, so that it is impossible anywhere to draw a positive line of distinction; nor can the *D. agile* of Sars be regarded, I think, as other than a deep-sea, slender, straighter form of the same species. As we descend further into the abyss of the sea, where the

mollusca are less and less exposed to be disturbed by tide, storm, or current, and especially where combined with this state of quietude the bottom is a soft, almost impalpable mud, we expect to find and do find that they become more and more slender, thin-shelled and delicate; and this is just what takes place with respect to *Dentalium entalis*. The type form is everywhere in the shallower waters, and in 100 f. and deeper is associated with *D. abyssorum*, which ranges in 100—400 f. in the district examined; but full grown *D. agile* were only met with at one spot to the south of Bukken in about 200 fathoms. Prof. G. O. Sars has given a table of the comparative length and width of aperture in the three shells. In the following table I reproduce the measurements he gives of the largest shells, and add those of some examined by myself.

D. entalis.

Length of Shell.		Width at aperture.	Authority.
1.—42 Mill. ...	...	4 Mill. ...	G. O. Sars (largest).
2.—55 „ ...	...	5 „ ...	Bukken, Norway, A.M.N.
3.—50 „ ...	...	5 „ ...	Britain (Cumbrae) A.M.N.

D. striolatum.

1.—49 „ ...	...	5 „ ...	G. O. Sars (largest).
2.—45 „ ...	...	4 „ ...	G. O. Sars (next).
3.—48 „ ...	...	4 „ ...	Norway, A.M.N.
4.—41 „ ...	...	4 „ ...	Norway, A.M.N.

D. agile.

1.—58 „ ...	...	4 „ ...	G. O. Sars (largest).
2.—45 „ ...	...	3 „ ...	G. O. Sars (next).
3.—51 „ ...	...	3½ „ ...	Sogne Fiord, 670 f.*
4.—48 „ ...	...	4 „ ...	Bukken, 200 f., A.M.N.
5.—47 „ ...	...	4 „ ...	Bukken, 200 f., A.M.N.
6.—45 „ ...	...	3½ „ ...	Bukken, 200 f., A.M.N.

It will be seen from the above that the Bukken specimens of *D. agile* from 200 fathom, which agree with that form in

* A specimen for which I am indebted to Herr H. Friele.

their very slight curvation, have a greater proportional diameter than 1 and 2, Sars' type specimens, which were from the greater depth of 200—300 fathoms, while that from Sogne Fiord at the great depth of 670 fathoms is of about the same proportions as these latter. The specimens of each form measured by me are not in any other way selected—they are simply the largest I possess.

113. *Siphonodentalium Lofotense*, M. Sars.

Siphonodentalium Lofotense, M. Sars. Malacozoologiske Jagttagelser (in Chr. Videns-Selsk. Forhand., 1864), p. 17, (separate copy), pl. vi., fig. 29—33.

Siphonodentalium Lofotense, Jeffreys. Brit. Conchol., v., p. 195, pl. ci., fig. 2.

Oster Fiord, Bergen Fiord, and upper part of Kors Fiord, opposite entrance to Bukken, in 100—400 fathoms.

114. *Siphonodentalium tetragonum*, (Brocchi).

Entalina tetragonum, Brocchi. Notiz. foss. M. pell. e Ficar., p. 27 (fide Monterosato).

Dentalium quinquangulare, Forbes. Brit. Assoc. Rep., 1843 (1844), p. 188.

Dentalium abyssorum, junior, Sars. Foss. Dyrelevninger fra Quartærperioden, 1864, p. 43, fig. 107—109.

Siphonodentalium pentagonum, M. Sars. Malacozoologiske Jagttagelser (in Videns-Selsk. Forhand, 1864), p. 27, pl. vii., fig. 45—55 (figuræ bonæ).

Dentalium quinquangulatum, Reeve. Conchol. Iconica, "Dentalium," 1872, pl. v., fig. 35 (figura mala).

Common in fine mud, 50—400 fathoms.

115. *Cadulus subfusiformis*, (M. Sars).

Siphonodentalium subfusiforme, M. Sars. Malacozoologiske Jagttagelser (in Chr. Videns-Selsk. Forhand., 1864), p. 21, pl. vi., fig. 36—40; pl. viii., fig. 41—44 (but not *Cadulus subfusiformis*, Jeffreys' British Conchology.)

Helonyx subfusiformis, Monterosato. Nuova Revista delle Conchyglie Mediterranee, 1875, p. 20.

In the upper part of Kors Fiord, directly south of the entrance to Bukken, in 100—200 fathoms. This shell was dredged by Jeffreys and myself in Shetland, but the more abundant form in Shetland, and that which is described and figured under this name, *Cadulus subfusiformis*, in "British Conchology," has since been regarded as a distinct species, and has been named by Marquess Monterosato *Helonyx Jeffreysii*. He places these allied forms in the genus *Helonyx*, Stimpson, and thus distinguishes them.

"*Helonyx Jeffreysii*. Apertura anteriore obliquamente troncata; base o apertura posteriore compressa, leggermente intaccata a chiascum lato."

"*Helonyx subfusiformis*. Più piccolo e meno gibboso del precedente; apertura anteriore troncata; apertura posteriore non compressa circolare e non intaccata."

116. *Cadulus propinquus*, G. O. Sars.

Cadulus propinquus, G. O. Sars. Moll. Reg. Arct. Norw., 1878, p. 106, pl. xx., fig. 15a-b.

Larger and more tumid than the last; occurring in several stations, Oster Fiord, Bergen and Kors Fiord, in 100—400 f. Just described by Sars.

118. *Chiton alveolus*, M. Sars.

Chiton alveolus, M. Sars, MS. Lovén, Index Moll. Scand. (in Kong. Vet. Akad. Forhand., 1846), p. 159.

Frequent in depths down to 100 fathoms.

130. *Lepeta cæca*, (Müller).

Oster Fiord, north of Bukken, and Kors Fiord, in 10—180 fathoms.

137. *Cyclostrema basistriatum*, Jeffreys.

Cyclostrema basistriata, Jeffreys, MS. Friele, Oversigt

over de i Bergens Omegn forekommende skaldækte Mollusker (in Chr. Videns-Selsk. Forhand., 1873, p. 15).

Cyclostrema basistriatum, Jeffreys. Ann. Nat. Hist., March 1877, p. 234.

Cyclostrema Peterseni, Friele. Prelim. Rept. on Mollusca of the Norwegian N. Atlant. Exped., 1876 (in Nyt. Mag. fra Naturvidenskaberne, 1877, p. 3).

An abyssal mollusk, rare in 100-400 f., in Oster Fiord and Kors Fiord. Herr Friele tells me that he now considers his *C. Peterseni* to be a more developed state of the shell he had previously recorded as *C. basistriatum*, Jeffreys, MS.

138. *Cyclostrema trochoides*, Jeffreys, MS.

Cyclostrema trochoides, Jeffreys, MS. Friele, Bidrag til Vestlandets Molluskfauna (in Chr. Videns-Selsk. Forhand., 1875, p. 60).

Off Börnestangen, Sartoro, 40 fathoms. First dredged by Jeffreys in the 'Porcupine' Exped., 1870, off the Portuguese coast; and subsequently by Friele in the Bergen district. It has not however yet been described.

139. *Mølleria lævigata*, Jeffreys, MS.

Mølleria lævigata, Jeffreys, MS. Friele, Bid. til Vestlandets Molluskfauna (in Chr. Videns-Selsk. Forhand., 1875, p. 60).

Another undescribed species, found south side of Kors Fiord in 180 fathoms, in company with *Cyclostrema basistriatum*, &c.

147. *Craspedotus limbatus*, (Phil., junior).

Monodonta limbata, Philippi. Faun. Moll. Sicil., ii., 1844, p. 157, pl. xxv., fig. 19.

"*Monodonta Tinei*, Calc. = *T. horridus*, O. G. Costa. Pallus. = *Heleciella costellata*, O. G. Costa," (fide Monterosato).

Trochus (Monodonta) limbatus, Friele, Bergens Omegn forekom. skaldækte Mollus. (Chr. Videns-Selsk. Forhand., 1873), p. 16 (no description).

Craspedotus Tinei, Monterosato. Nuovo Revista delle Conchiglie Mediterranee, 1875, p. 25 (no description).

The synonymy which I have given in brackets is that of Monterosato, as I have had no opportunity of consulting the authors referred to. Dr. Jeffreys, however, tells me that Weinkauff disputes this shell being *M. Tinei* of Calcare, and I therefore have adopted Philippi's name.

Two or three specimens dredged off Børnestangen, in the Island of Sartoro (just south of the passage known as Leerosin) in 40 fathoms; and one very young on the south side of Kors Fiord in 180 fathoms.

The ground on which this shell was dredged, off Børnestangen, in Sartoro, is a rich rufous shell-sand. I found nothing like it anywhere else, and the condition of the *Craspedotus* found by me, as well as of those I saw in Friele's collection is such to suggest that they may be fossil. Indeed the rufous shell-sand was so different from anything else I had seen, that I was at first disposed to regard not only the *Craspedotus* but also the very numerous valves of *Lima Sarsii* and other shells found with it, which had the same appearance, as fossil, but I subsequently, on careful examination, found the *Lima Sarsii* alive in the same dredging, nor could I find any signs of other species which suggested any fossil possibility unless it were fragments of *Scalaria Grænlandica*, but although I did not find this species living or perfect, it has been found by M. Sars at "Manger, 40 f." It is a strong argument, moreover, in favour of the specimens of this Mediterranean shell found here and elsewhere on the Norwegian coast being recent, that the shell is altogether unknown as a glacial fossil. I think it likely that the shell-sand at Station 19 has been drifted up Kors Fiord, and had I the opportunity—which I hope others may have—I should dredge carefully the northern side of Kors Fiord between Haakelsund and Kleppestø.

153. *Rissoa jeffreysii*, Waller.

Not rare in Kors Fiord; also in Oster Fiord, 100—200 f.

154. *Rissoa abyssicola*, Forbes.

A few specimens in one dredging only, Oster Fiord, 375 f.

165. *Rissoa cingellus*, (Mont.) This is, I believe, a very local shell in this part of Norway; living under stones between tide-marks at Bukken.167. *Rissoa turgida*, Jeffreys.

Rissoa turgida, Jeffreys. Norwegian Mollusca (Ann. Nat. Hist., June 1870), p. 8.

A single living specimen* in 100—200 f., Oster Fiord.

173. *Læocochlis granosa*, (S. Wood).

Cerithium granosum, S. Wood. Palæont. Soc., 1848, p. 73, pl. viii, fig. 9.

Triforis McAndrei, H. Adams. Proc. Zool. Soc., 1856, p. 1.

Triforis nivea, M. Sars. Chr. Videns-Selsk. Forhand., 1858, p. 85.

Læocochlis Pommerania, Dunker & Metzger. Nach. d. deutsch. Malaco-zool. Gesellschaft, 1874, p. 7; and Nordseefahrt der Pommerania, 1874, pp. 249 and 258, pl. vi., fig. 3 and woodcut, p. 264, fig. 3.

A single living example of this interesting sinistral mollusk dredged, Leerosin 80—110 f.

174. *Aclis unica*, (Mont.) Off Börnestangen, Sartoro, 15—40 fathoms; Haakelsund in 3 fathoms; one specimen only in each locality.176. *Aclis Walleri*, Jeffreys, var. *carinata*, Norman.

An *Aclis* from 180 f. south side of Kors Fiord differs from the typical *Aclis Walleri*—of which, however, I would

* This and several other recently described and MS. species have been kindly examined for me by Dr. Jeffreys.

consider it a variety—in having a distinct well-marked keel running round the centre of the whorls.

177. *Acilis ventrosa*, Jeff., var. *minor*, Friele.

Acilis ventrosa var. *minor*, Friele. Bidrag til Vestlandets Molluskfauna (in Chr. Videns-Selsk. Forhand., 1875), p. 61, pl. i., fig. 7b.

Very rare; off Børnestangen in Sartoro, 15—40 f.

188. *Odostomia albella*, (Lovén). Living under stones between tidemarks at Bukken, in company with *Rissoa cingellus* and *Hydrobia ulvæ* var. *Barleei*.

189. *Odostomia minima*, Jeffreys. A single specimen of this minute but very distinct *Odostomia* in 180 f., Kors Fiord; new to the Norwegian Fauna.

200. *Natica affinis*, (Gmelin).

Nerita affinis, Gmelin. Lin. Syst. Nat., ed. xiii., p. 3675.

Natica affinis, Jeffreys. Brit. Conchol., v., p. 215, pl. cii., fig. 3.

Bergen Fiord; off Børnestangen, and Haakelsund, and at the entrance to Fane Fiord, 4—200 f.

201. *Natica Islandica*, (Gmel.) One young specimen at Station 19.

206. *Aporrhais Serresianus*, (Michaud).

Rostellaria Serresiana, Michaud. Bull. Soc. Linn. Bord., ii., 1828, p. 120, fig. 3—4.

Chenopus Serresiana, Phil. Entom. Moll. Sic., ii., 1844, p. 185, pl. xxvi., fig. 6.

The *Aporrhais pes-carbonis*, F. & H. (= *A. McAndrews*, Jeffreys) is nothing more than a dwarf form of this shell. But the specimens which I dredged at Station 17 do not belong to that dwarf (Shetland) form but are the true *Serresianus*, and correspond exactly with the specimens taken by the 'Porcupine' Expedition in 1869, off Valentia, 100 f.

(Prelim. Report, 'Porcupine' Expedition, Proc. Royal Soc., 1870, p. 416), and subsequently in the same locality by Mr. Waller.

207. *Cancellaria viridula*, (Fab.)

Tritonium viridulum, Fab. Faun. Grœnl., 1770, p. 402.

Admete crispa, Möller. Index Moll. Grœnl. in Naturhist. Tidss., iv., 1842, p. 88.

Cancellaria buccinoides, Couthouy. Bost. Jour. Nat. Hist., ii., p. 105, pl. iii., fig. 3.

Cancellaria Couthouyi, Jay. Cat. Gould Invert. Massac., 1841, p. 283, fig. 190.

Cancellaria Couthouyi, DeKay. Zool. New York, 1843, p. 183, pl. vii., fig. 160.

Cancellaria viridula, Middendorff. Beit. z. Malakoz. Ross., pt. ii., 1849, p. 110, pl. x⁴, fig. 1—4.

Off Slettin, which is a little north of Bukken, 50—80 f.; and Haakelsund in Kors Fiord, 200 f.

214. *Buccinum Humphreysianum*, Bennett. One living half-grown example, near the entrance of Fane Fiord.

216. *Trophon clathratus*, (Lin.)

Murex clathratus, Lin. Syst. Nat., edit. xii., 563, (not *T. clathratus*, F. & H.)

The typical *T. clathratus* is a truly Arctic recent form. It is also a common glacial fossil, and is occasionally dredged in a fossil state. A specimen in this condition I dredged in Bergen Fiord; but some other smaller specimens, which Dr. Jeffreys agrees with me in referring to the typical, few-ribbed Arctic form, were dredged, which appear quite recent though the animal was not in them. Unfortunately I had not at first recognised these as distinct from the var. *truncatus*, with which therefore I mixed them, and thus do not know the exact spot in which they occurred.

217. *Trophon clathratus* var. *Gunneri*, (Lovén).

Tritonium Gunneri, Lovén. Index Moll. Scand. (in Kong. Vet. Akad. Forhand., 1846), p. 144.

Two young specimens of this marked variety, chiefly distinguished "varicibus 9—10 albis, *postice auriculato-cristatis*," dredged Station 19.

222. *Columbella rosacea*, (Gould).

Buccinum rosaceum, Gould. Silliman's Journal, xxxviii., p. 197, and Invert. Massac., 1841, p. 311, fig. 195.

Mangelia Hölbollii, Möller. Index Moll. Grœnl. (in Naturhist. Tidssk., iv., 1842, p. 85).

Columbella Hölbollii, Mörch. Prod. Faun. Moll. Grœnl., 1857, p. 14.

Mangelia Hölbollii, Waller. Journ. Royal Dublin Soc., 1858, p. 34, pl. i., fig. 1a-b.

A single specimen, worn and fossil looking, but perhaps recent, in Bergen Fiord.

223. *Columbella nana*, (Lovén). One only; 180 f south side of Kors Fiord.

224. *Metzgeria alba*, (Jeffreys).

Tritonium pusillum, M. Sars. Chr. Videns-Selsk. Forhand., 1858, p. 39, (name only).

Latirus albus, Jeffreys, (in Wyville Thomson's "Depths of the Sea," 1873, p. 464, wood cut).

Lathyrus and *Meyeria albellus*, Dunker and Metzger. Nach. d. deutsch. Malok.-Zool.-Gesellschaft, 1874, p. 8; and Zool. Ergebnisse der Nordseefahrt, 1874, p. 257 and 264 (wood cut).

A very young specimen dredged in 15—40 fathoms, off Børnøstangen in Sartoro. This shell is not properly referable to *Latirus*, and Dunker and Metzger have established a genus *Meyeria* to receive it, but *Meyeria*, as well as *Meyerina* and

Meyerella,* have all been previously employed, and I therefore suggest the dedication of the genus to Metzger (Metzgeria).

225. *Taranis Mörchi*, (Malm.)

Trophon Mörchi, Malm. Göteborgs' Videns o Vetterh. Samh. Hand. 1863, iii, pl. ii, fig. 5.

Mangelia Mörchi, M. Sars. Om de i norge forekom. foss. Dyrelevninger fra Quartærperioden, 1865, p. 48, pl. iii, fig. 110—111.

Pleurotoma Mörchi, M. Sars. Bidrag til kunds. o Christia. Fauna, pt. ii, 1870, p. 51.

Taranis Mörchi, Jeffreys. "On Norwegian Mollusca," (Ann. Nat. Hist., June 1870), p. 10 (separate copy).

Taranis Mörchi, Dunker & Metzger. Zoolog. Ergebnisse der Nordseefahrt, 1874, p. 259.

This beautifully-sculptured shell is widely distributed, though rare in the district examined. According to Monterosato it has been described from the Mediterranean as *Pleurotoma cirratum*, Brug., and *Bela demersa*, Tiberi.

226. *Pleurotoma nebula*, (Mont.)

A rare shell in the neighbourhood of Bergen. A single living specimen was taken in each of the two stations where it occurred.

227. *Pleurotoma carinata*, Bivona.

Pleurotoma carinata, Jeffreys. Brit. Conchol., v., p. 221, pl. cii, fig. 7.

Living at several spots near Bukken, and in Kors Fiord, in 40—200 fathoms..

228. *Pleurotoma nivalis*, Lovén. South side of Kors Fiord, 180 f.; living.

230. *Pleurotoma turricola* var. *scalaris*, Möller.

Mangelia scalaris, Möller. Index Mollusc. Grœnlan. (in Naturhist. Tidssk., iv., 1842), p. 85.

* *Meyeria*, M'Coy, genus of fossil Crustacea, 1849; *Meyerina* or *Meyerella*, genus of sponges, Gray, 1872.

A young specimen taken N. E. of Bukken in 10—40 f., and identified for me as this variety by Jeffreys.

231. *Pleurotoma turricola* var. *rosea*, (M. Sars).

Tritonium roseum, Sars, MS. Lovén, Index Moll. Scand. (in Kong. Vet. Akad. Forhand., 1846), p. 144.

One living specimen N. E. of Bukken, 10—40 f.

232. *Pleurotoma tenuicostata*, M. Sars.

Pleurotoma tenuicostata, Sars. Videns-Selsk. Forhand., 1868, p. 259.

The reference is to a MS. name; but the species will be described and figured in Prof. G. O. Sars' forthcoming work on the Mollusca of Arctic Norway. Dredged in 400 f. in Oster Fiord.

233. *Pleurotoma bicarinata*, (Couth), var. *violacea*, Migh. and Adams.

Pleurotoma violacea, Migh. & Adams. Proc. Boston Soc. Nat. Hist., i., 1844, p. 50.

Very rare; 180 f. south side of Kors Fiord.

234. *Pleurotoma bicarinata* var. *cylindracea*, (Möller).

Defrancia cylindracea, Möller. Index Mollus. Grœnl. (in Naturhist. Tidssk., iv., 1842, p. 86.

Pleurotoma bicarinata, var. *cylindracea*, Jeffreys. Ann. Nat. Hist., ser. iv., vol. xix., 1877, p. 328.

Two specimens; Bergen Fiord, 80—100 f.

238. *Defrancia purpurea*, (Mont.) A small variety, off Slettin.

241. *Scalaria Grœnlandica*, (Chem.)

Turbo clathrus Grœnlandicus, Chem. Conch. Cab., xi., p. 155, fig. 1878—1879.

Scalaria Grœnlandica, Forbes & Hanley. Brit. Mollus., iii., p. 211, pl. lxx., fig. 5—6.

Two fragments only off Børnestangen in Sartoro, in 15—40 fathoms. It is also in Friele's list.

247. *Utriculopsis globosa*, (Lovén).

Amphisphyræ globosa, Lovén. Ind. Moll. Scand. (in Kong. Vet. Akad. Forhand., 1846), p. 143.

Utriculus globosus, Jeffreys. Brit. Conchol., v., p. 223, pl. cii., fig. 8.

Utriculopsis vitrea, M. Sars. Bidrag til Kunds. om Chr. Fauna, pt. ii., 1870, p. 65, pl. xi., fig. 15—18.

Living in 50—200 fathoms, Oster Fiord.

248. *Volvula acuminata*, (Brug.)

Cylichna acuminata, Jeff. Brit. Conchol., iv., p. 411, pl. xciii., fig. 1.

Volvula acuminata, M. Sars. Bidrag til Kunds. om Chr. Fauna, 1870, p. 62, pl. xi., fig. 19—22.

A single specimen picked out by Dr. Jeffreys from our 375 fathoms' dredging in Oster Fiord.

250. *Utriculus expansus*, Jeff. Living, 5—200 f., Oster Fiord, and 50—120 f., near the entrance to Fane Fiord.

256. *Scaphander lignarius*, (Lin.) Two living specimens of var. *curta*, Jeffreys, (Brit. Conchol., iv., p. 444), to the N. and N.E. of Bukken in 10—80 fathoms.

257. *Scaphander puncto-striatus*, (M. & Ad.)

Bulla puncto-striatus, Mighels and Adams. Proc. Bost. Soc. Nat. Hist., i., p. 49 (Nov. 1841).

Scaphander librarius, Lovén. Ind. Moll. Scand. (in Kong. Vet. Akad. Forhand., 1846, p. 142.

Scaphander librarius, Jeffreys. Brit. Conchol., iv., p. 446, and v., p. 224, pl. cii., fig. 9.

Widely distributed in 50—400 fathoms in the district examined.

A short dredging excursion of three weeks in a district which had been worked by such able naturalists as M. Sars, Danielssen, Koren, Friele, G. O. Sars and Hansen, could not be expected to bring to light many mollusca which had not

previously been found. But the fact that two hundred and sixty one species and varieties were found in this short time, speaks volumes for the richness of these Fiords. Many of the mollusca, moreover, are northern or abyssal forms which have either only very recently been described, or are still MS. species; and thus some additions have been made to the already long list of the Bergen district mollusca.

If the mollusca of the table on pages 22-24 be added to those found by myself we obtain the entire Molluscan Fauna of the district. I have however been unable to include the Cephalopoda, for although aware that many species have been identified by the Bergen naturalists I can only find record of the occurrence of *Sepiola Rondeletii*, Leach, which was procured by the "Pommerania" in Kors Fiord.

Some mollusca which are in Herr Friele's Bergen catalogue have been omitted here, as they owed their insertion, he informs me, to mistake:—*Montacuta Dawsoni*, *Arca obliqua* (= *A. glacialis*, which is also recorded), *Barleeia rubra*, *Odostomia plicata*, *O. umbilicata*, *O. Warreni*, and *O. lactea*, and *Philine catena*. *Cerithium vulgatum* and *C. calabrum* have also been omitted as not native. The specimens which were procured by Prof. M. Sars at Manger, and are now preserved in the museum at Christiania, are old and worn shells. It is probable that they came from ballast.

There is preserved in the Christiania Museum a fine and quite fresh-looking specimen of *Cardium aculeatum*, which was dredged by Prof. M. Sars in Bergen Fiord. On examining this shell carefully I found on it a patch of the cells of the Polyzoon, *Lepralia violacea*. "Hereby hangs a tale." This *Lepralia*, like the *Cardium* on which it had taken up its dwelling, is a southern form, which on the British coast scarcely reaches the south-west of Scotland. It is unknown in the north, nor have I ever seen it from the east of Scotland or north-east of England, and it is unknown in Norway.

There is thus the strongest presumptive evidence against *Cardium aculectum* being a native of Norway, not only on account of the known distribution of the mollusk, but because it carries with it the evidence of the *L. violacea* that it has lived and died in a more southern home.

It will be interesting now to compare our knowledge of the mollusca of the Bergen district with that of neighbouring seas north and south.

GEOGRAPHICAL DISTRIBUTION.

SUMMARY

SHOWING THE TOTAL MOLLUSCAN FAUNA OF BERGEN DISTRICT AS COMPARED WITH THOSE OF NEIGHBOURING SEAS.

	Iceland.	Færoe Islands,	Bergen.	Shetland.	Christiania.	Denmark.	North Sea, 'Pommerania.'
Brachiopoda	1	0	5	6	3	0	4
Conchifera	46	44	136	126	127	93	98
Solenococonchia	1	2	7	5	5	1	3
Gasteropoda (shelled)	66	52	179	184	119	96	102
Nudibranchiata &c.	8	7	25	39	16	43	0
Pteropoda	4	2	1	3	1	0	0
Cephalopoda	2	5	1	6	2	(?)	2
	128	112	354	369	273	233	209
Doubtful species... ..	9	2	4	5	1	1	...
	119	110	350	364	272	232	209

The authorities who have been relied on are:—

Iceland.—Mörch table in *Faunula Molluscorum Insularum Færoensium*, 1867. [I have not had an opportunity of seeing the *Faunula Molluscorum Islandiæ* published by the same

author, 1868, but it probably does not contain many species not in the catalogue of the year before].

Faroe Islands.—Mörch, *Faunula Molluscorum Insularum Færoensium*, 1867.

Bergen.—See note on page 32.

Shetland.—Jeffreys' *Last Report of Dredging among the Shetland Isles* (Brit. Assoc. Report for 1868 (1869), p. 232).

Christiania.—Asbjørnsen (P. Chr.), *Bidrag til Christianiafjordens Litoralfauna*, 1854; M. Sars, *Bidrag til Kundskab om Christianiafjordens Fauna*, ii., 1870, p. 49; Jeffreys *On Norwegian Mollusca* (Ann. Nat. Hist., June, 1870); Brøgger (W. C.) *Bidrag til Christianiafjordens Molluskfauna*, 1872.

Denmark.—Mörch, *Synopsis Molluscorum marinorum. Danie* (*Vidensk. Meddel. f. d. Naturhist. Forening i Kjöbenhavn*, 1871, p. 157).

North Sea.—Dunker and Metzger, *Zoologische Ergebnisse der Nordseefahrt, 'Pommerania,' vom 21 July, bis 9 September, 1872* (1874).

The voyage of the 'Pommerania' extended from Yarmouth to Bergen. The mollusca are described by Dunker and Metzger. The list is very mixed, as it includes the mollusca of the open sea and those procured on both Norwegian and British coasts extending as far south as Yarmouth.

The species subtracted in the summary as doubtful (many are more than doubtful) are:—**Bergen:** (from my list) *Yoldia arctica*, *Astarte crenata*, *Mya Uddevalensis*, *Craspedotus limbatus*. **Shetland:** *Terebratella Spetsbergensis*, *Rhynchonella psittacea*, *Leda pernula*, *Gastrana fragilis*, *Fissurella Græca*. **Denmark:** *Neritina fluviatilis* (in Mörch's Catalogue, freshwater). **Christiania:** *Pecten Islandicus*. **Faroe Islands:** *Mactra solida*, *Lamellidoris Lovenii*. **Iceland:** *Rhynchonella psittacea*, *Modiolaria faba*, *Venus*

gallina, *Psammobia tellinella*, *Cyrtodaria siliqua*, *Cochlodesma pratenue*, *Littorina littorea*, *Rissoa cingellus*, *Lamellidoris inconspicua*.

In the following notes on the Geographical Distribution of the mollusca which have just been tabulated, I shall indicate what I consider to be the *home* of species by the following letters:—

- | | |
|-------------------------|--------------|
| O.—Oceanic. | E.—European. |
| A.—Abyssal. | P.—Polar. |
| E. A.—Eastern American. | |

O.—Oceanic. Species which swim or float freely on the surface, and are not confined to any shore, their distribution being chiefly governed by the *temperature of the surface water*.

A.—Abyssal. Species which live at great depths, scarcely ascending to the line of 100 fathoms' soundings. They are subjected to great pressure, and inhabit so great a depth of water that the temperature is but slightly, if at all, affected by the seasons of the year and heat or cold of the surface. These forms have a very extended distribution, being independent of those climatic conditions which affect animals living at lesser depths.

E.—European. These are littoral forms, which, though they may descend below the 100 fathoms' soundings, are for the most part much more abundant in shallower water. They may have originated on any part of the European coast, and have ranged thence north or south; but their distribution, even though it has extended to America, has been along the coast-line. They cannot live in the abyss any more than can the abyssal animals endure the lesser pressure and changeful temperature of shallow seas.

P.—Polar. These animals form a most important feature in

the Northern Arctic and temperate seas, originating and luxuriating under glacial conditions, but they nevertheless extend far down into the temperate regions of both Atlantic and Pacific Oceans. Some forms seem to have migrated southwards (e.g., *Tectura testudinalis*), but the larger number are, I believe, retiring northwards under the altered and less Arctic climate of the North Atlantic. As a rule in their more southern habitats, they will be found in a dwarfed form, resultant from the unfavorable conditions in which they now find themselves, and are gradually becoming extinct. As species which have apparently very recently (geologically speaking) become extinct in the British Seas, may be mentioned *Hypothyris psittacea*, *Columbella rosacea*, *Astarte crenata*, *Leda pernula*, *Mölleria costulata*.

In order to complete my views as to the great groups into which the Fauna of the North Atlantic ought to be divided, I add the remaining groups though they have no immediate bearing on the present paper.

M.—Mediterranean.

Cn.—Canarian. Species which have originated on the Western coast of Africa or the contiguous cluster of Islands as far south as St. Domingo, lat. 10. N.

E. A.—Eastern American. Littoral forms which have originated on any part of the N.E. American coast as far south as (say) Cape Hatteras, lat. 35 N., migrating thence N. and S. As far as our present knowledge goes the migration of such littoral forms as are found both in Europe or America, but have not a common Polar origin, seems to have been from east to west. This may probably be accounted for by the course of the main ocean currents, which partially assist the migration.

Cb.—Caribbean. Species which have their home in the Gulf of Mexico and among the West Indian Islands, from Cape Hatteras, lat 35. N. to Trinidad lat. 10. N.

Out of the 353 Bergen Mollusca, (see page 34)—

272 = 77.05	per cent.	are found at	Shetland.
290 = 82.15	" "	" "	Britain.
179 = 50.70	" "	" "	Denmark.
234 = 66.28	" "	" "	Christiania.
84 = 23.79	" "	" "	Faroe.
86 = 24.35	" "	" "	Iceland.
83 = 23.51	" "	" "	Greenland.
94 = 26.62	" "	" "	N.E. America.
212 = 60.05	" "	" "	Mediterranean.

The last number is very surprising. Of course the area is very large as compared with most of the preceding districts, but it also shows how well that area has been worked by the many able Mediterranean malacologists.

Though in these per centages the Nudibranchiata have been included, they have been so little attended to in most of the districts that no conclusion can be drawn from their known presence or apparent absence. They are therefore altogether omitted in the numbers and lists with which I bring this paper to a close. These lists, together with the tables (page 16-34), will supply complete catalogues of the Molluscan Fauna—as far as known to me—of Shetland, Denmark, Christiania, Faroe, and Iceland, and bring before us the mollusca from among which probable additions to the Bergen Fauna may be expected.

MOLLUSCA OF SHETLAND.

The following 64 Shetland Mollusca have not been found in the Bergen district.

? *Terebratula Spetsbergensis*, *David's*. P

? *Rhynchonella psittacea*, *Lin.* P

Pinna rudis, *Lin.* E

- Mytilus Adriaticus, *Lamarck*. E
 Nucula nitida, *G. B. Sowerby*. E
 Limopsis aurita, *Brocchi*. A
 Pectunculus glycymeris, *Lin.* E
 Lepton Clarkiæ, *Clark*. E
 Montacuta donacina, *S. Wood*.
 ,, tumidula, *Jeffreys*.
 Kellia cycladia, *S. Wood*.
 Astarte triangularis, *Mont.* E
 ? Gastrana fragilis, *Lin.* E
 Tellina balaustina, *Lin.* E
 ,, donacina, *Lin.* E
 Psammobia costulata, *Turt.* E
 Mactra stultorum, *Lin.* E
 Solecurtus candidus, *Renier*. E
 ,, coarctatus, *Pult.* E
 Pandora obtusa, *Leach*. E
 Cadulus Jeffreysii, *Monterosato*.
 Chiton cancellatus, *Leach*. E
 (?=alveolus, *Sars*).
 ? Fissurella Græca, *Lin.* E
 Cyclostrema nitens, *Phil.* E
 ,, serpuloides, *Mont.* E
 Trochus magus, *Lin.* E
 ,, amabilis, *Jeffreys*.
 ,, Montagui, *W. Wood*. E
 Lacuna crassior, *Mont.* E
 ,, puteolus, *Turt.* E
 Littorina neritoides, *Lin.* E
 Rissoa costata, *Adams*. E
 ,, proxima, *Alder*. E
 ,, vitrea, *Mont.* E
 Jeffreysia globularis, *Jeffreys*.
 Homalogyra rota, *F. & H.* E

- Scalaria clathratula*, *Adams.* E
Aclis ascaris, *Turt.* E
 „ *Gulsonæ*, *Clark.* E
Odostomia nivosa, *Mont.* E
 „ *Lukisi*, *Jeffreys.* E
 „ *umbilicaris*, *Malm.* E
 „ *conspicua*, *Alder.* E
 „ *obliqua*, *Alder.* E
 „ *nitidissima*, *Mont.* E
 ? *Eulima subulata*, *Don.* E
Natica sordida, *Phil.* E
 „ *catena*, *Da Costa.* E
Torellia vestita, *Jeffreys.*
Cerethiopsis Metaxa, *Delle Chiaje.* E
Buccinopsis Dalei, *J. Sow.* P
Fusus Norvegicus, *Chemn.* P
 „ *Turtoni*, *Bean.* P ?
 „ *Berniciensis*, *King.* P
Columbella Haliæti, *Jeffreys.*
Defrancia gracilis, *Mont.* E
Marginella lævis, *Don.* E
Utriculus obtusus, *Mont.* E
Philine catena, *Mont.* E
 „ *angulata*, *Jeffreys.*
 „ *pruinosa*, *Clark.* E
 „ *nitida*, *Jeffreys.*
Clio pyramidalis, *Lin.* O
 „ *infundibulum*, *S. Wood.* O

On the other hand, the following 67 Bergen Mollusca have not been found near the Shetland Islands:—

- Pecten varius*, *Lin.* E
 „ *vitreus*, var. *abyssorum*, *Sars.* A
 „ *Hoskynsi*, *Forbes.* A or P

- Lima excavata*, *J. C. Fab.* E (?)
Lima hians, *Gmel.* E
Dacrydium vitreum, *Möll.* A
Nucula tumidula, *Malm.* A
Yoldia frigida, *Torell.* A
 „ *lucida*, *Lovén.* A
 „ *Messanensis*, *Sequenza.* A
Malletia obtusa, *M. Sars.* A
Limopsis minuta, *Phil.* A
Pecchiolia abyssicola, *M. Sars.* A
Decipula ovata, *Jeffreys.* A
Axinus flexuosus, var. *Sarsii*, *Phil.* A
 „ *eumyarius*, *M. Sars.* A
Kelliella abyssicola, *M. Sars.* A
Astarte arctica, *Gray.* P
Tapes decussatus, *Mont.* E
 „ *aureus*, *Gmel.* E
Tellina calcarea, *Chem.* P
Psammobia vespertina, *Chem.* E
Scrobicularia piperata, *Bellon.* E
Lyonsia arenosa, *Möll.* A
Thracia truncata, *Brown.* P
 = *myopsis*, *Beck.*
Sphenia Binghami, *Turt.* E
Neæra obesa, *Lovén.* A
 „ *jugosa*, *S. Wood.* A
Corbula ovata, var. *rosea*, *Brown.* E
Mya arenaria, *L.* E
Dentalium agile, *M. Sars.* A
Siphonodentalium tetragonum, *Brocchi.* A
Cadulus propinquus, *G. O. Sars.* A
Chiton alveolus, *M. Sars.* E
 (? = *C. cancellatus*).
Tylodina Dubenii, *Lovén.* E (?)

- Cyclostrema trochoides, *Jeffreys*.
 „ basistriatum, *Jeffreys*. A
 Mölleria lævigata, *Jeffreys*.
 Trochus affinis, *Jeffreys*.
 ? Craspedotus limbatus, *Phil*.
 Rissoa calathus, *F. & H.* E
 „ turgida, *Jeffreys*.
 Læocochlis granosa, *S. Wood*.
 Aclis Walleri, var. carinata, *Norman*.
 „ ventrosa, *Jeffreys*.
 Odostomia rissoides, *Hanley*. E
 Natica affinis, *Gmel.* P
 Lamellaria latens, *Müll.*
 Cancellaria viridula, *Fab.* P
 Trophon clathratus, *Lin.* P
 „ „ var. Gunneri, *Lovén.* P
 „ craticulatus, *Fab.* P
 Fusus Sarsii, *Jeffreys*.
 „ fenestratus, *Turton.* A
 Columbella rosacea, *Gould.* P
 Metzgeria alba, *Jeffreys.* A (?)
 Taranis Mörschi, *Malm.* A
 Pleurotoma turricola, var. rosea, *M. Sars.* E
 „ „ var. scalaris, *Möll.* P
 „ tenuicostata, *M. Sars.* A
 „ bicarinata, var. violacea, *M. & Ad.* P
 „ „ var. cylindracea, *Möll.* P
 „ attenuata, *Mont.* E
 Scalaria communis, *Lamk.* E
 „ Groenlandica, *Chem.* P
 „ Turtonæ, *Turton.* P
 Philine lima, *Brown.*

The number of mollusca which belong to the Shetland and

the Bergen Faunæ is very nearly the same. A marked difference however shows itself when we come to examine what are the species which are present in the one Fauna but absent from the other. The Shetland mollusca which do not occur at Bergen are almost all European forms, inhabitants of warmer water than that which is usually to be met with in the Norwegian Fiords; while most of the mollusca marked Polar (P) are perhaps such as might rather be called abyssal, though they occur in as shallow water as 50 fathoms at times. They are mollusca which, though living on a rather soft (Foraminiferal and gritty) bottom, do not like mud such as that of the Bergen Fiords, and we should not expect to find them there; but they are almost sure to be found hereafter outside the islands which fringe the Bergen coast.

On the other hand, among the Bergen mollusca unknown near Shetland there are a few European but many Polar species, while the larger number are abyssal forms which are scarcely likely to be found in the shallower sea at Shetland. Though the deepest water of the British Seas is that round Shetland, yet it never exceeds 170 fathoms,* and the bottom is not that fine mud which these abyssal mollusca of the Bergen Fiords delight in. Further out in the Atlantic, however, to the west of Shetland, where the conditions are favorable to their existence, they reappear, and for the most part have a wide distribution in the depths of the sea, several reaching to the Mediterranean on the one hand or to Davis' Strait on the other.

MOLLUSCA OF DENMARK.

Out of the 190 Testaceous Mollusca of Denmark, 22 are unknown at Bergen. Only one Polar species crops up among these; the rest are almost without exception European. The Fauna of

* The "Outer Haaf" is usually 80 to 110 fathoms. It is only 25—30 N. by W. of Unst that the depth of 170 was reached in our dredgings.

Denmark is decidedly more southern in its character than that of Christiania.

- Mytilus Adriaticus, *Lamk.* E
- Modiolaria faba, *O. Fab.* P
- Nucula radiata, *Hanley.* E
- Donax trunculus, *Lin.* E
- „ „ var. lævigatus, *Chemn.* E
- Tellina pusilla, *Phil.* E
- Mactra stultorum, *L.* E
- „ solida, *L.* E
- Thracia phaseolina, *Lam.* E
- Pholas dactylus, *L.* E
- „ candida, *L.* E
- Teredo navalis, *L.* E
- “Trochus obliquatus, *Da Costa.*” E
- Lacuna puteolus, *Turton.* E
- Rissoa vitrea, *Mont.* E
- Hydrobia ventrosa, *Mont.* E
- Vermetus Lyngbyanus, *Mörch.*
- ? Natica sordida, *Swains.* E
- Odostomia plicata, *Mont.* E
- Aclis nitidissima, *Mont.* E
- Nassa pygmæa, *Mont.* E
- Pleurotoma brachystoma, *Phil.* E

MOLLUSCA OF THE CHRISTIANIA FIORD.

There are 254 Testaceous Mollusca known in this Fiord, of which 228 are common to the Bergen Fauna, while the following 26 are not known there.

- Anomia patelliformis, *L.* (typical). E
- ? Pecten Islandicus, *O. F. Müll.* P
- Nucula sulcata, *Brown.* E

- Nucula nitida*, *G. Sow.* E
 „ *delphinodonta*, *M. & Ad.* P
Montacuta Dawsoni, *Jeff.* P (?)
Astarte elliptica, *Brown.* E
Tellina pusilla, *Phil.* E
Thracia phaseolina, *Lamk.* E
Teredo navalis, *Lin.* E
Emarginula rosea, *Bell.* E
Lacuna albella, *Lovén.*
Rissoa costata, *Adams.* E
 „ *cornea*, *Lovén.* E
Hydrobia ventrosa, *Mont.* E
Fusus despectus, *L.* P
Nassa pygmæa, *Lam.* E
Pleurotoma brachystoma, *Phil.* E
 „ *mitrula*, *Lovén.* P
 „ *declivis*, *Lovén.* P
 „ *striolata*, *Scacchi.* E
 „ *cancellata*, *M. & Ad.* P?
Philine catena, *Mont.* E
 „ *flexuosa*, *M. Sars.*
Colobocephalus costellatus, *M. Sars.*
Colpodaspis pusilla, *M. Sars.*

It will be observed that the larger number of the above—of the distribution of which we know anything—are European, but a few are Polar.

MOLLUSCA OF THE FAROE ISLANDS.

Out of 97 known Testaceous Mollusca of Faroe 80 are in the Bergen list; the remaining 17 attest the mixed—northern and southern—character of the fauna of these Islands.

? *Rhynchonella psittacea*, *Chemn.* P

- Anomia ephippium*, *L.* E (typical form).
Pectunculus glycymeris, *L.* E
 ? *Mactra solida*, *L.* E
Tellina pusilla, *Phil.* E
 „ *calcareia*, var. *ovata*, *Sow.* P
Teredo bipennata, *Turt.* O
 “*Trochus umbilicalis*, *Da Costa.*” E
Littorina Groenlandica, *Beck.* P
Fusus despectus, *L.* P
Trichotropis acuminatus, *Jeff.* P
Pleurotoma pyramidalis, *Ström.* P
 „ *rufa*, *Mont.* E
Actæon tenellus, *Lovén.* E
 (? = var. of *tornatilis*).
Cylichna Sarsii, *Phil.*
Clione limacina, *Phipps.* O
Clio pyramidalis, *L.* O
-

MOLLUSCA OF ICELAND.

Of the 112 Testaceous Marine Mollusca of Iceland 81 are in the Bergen list, leaving the following 31, almost the whole of which it will be observed are Polar species.

The meagre lists of the Faroe and Iceland Mollusca show how little is known of the Marine Fauna of these islands. When the result of the ‘Porcupine,’ and especially of the ‘Vöringen,’ (Norwegian) Expeditions are published we may hope that these lists will be considerably extended.

- ? *Rhynchonella psittacea*, *Chem.* P
Pecten Islandicus, *O. F. Müll.* P
Modiolaria faba, *Fab.* P
 „ *discors*, var. *lævigata*, *Gray.* P
Corbulomya Steenstrupii, *Mörch.*

<i>Cardium Grœnlandicum</i> , <i>Chemn.</i>	P
„ <i>elegantulum</i> , <i>Beck.</i>	P
? <i>Cyrtodaria siliqua</i> , <i>Speng.</i>	P
<i>Thracia phaseolina</i> , <i>Lamk.</i>	E
<i>Magdala arctica</i> , <i>Gray.</i>	P
<i>Trochus cinereus</i> , <i>Couth.</i>	P
<i>Mölleria costulata</i> , <i>Möll.</i>	P
<i>Littorina Grœnlandica</i> , <i>Chemn.</i>	P
<i>Rissoa striata</i> var. <i>saxatilis</i> , <i>Möll.</i>	P
<i>Natica borealis</i> , <i>Gray.</i>	P
<i>Volumitra Grœnlandica</i> , <i>Beck.</i>	P
<i>Trichotropis acuminatus</i> , <i>Jeff.</i>	P
(= <i>T. borealis</i> , var.)	
<i>Buccinum Grœnlandicum</i> , <i>Chemn.</i>	P
<i>Fusus despectus</i> var. <i>fornicatus</i> , <i>O. Fabr.</i>	P
„ <i>tortuosus</i> , <i>Reeve.</i>	P
„ <i>Norvegicus</i> , <i>Chemn.</i>	P
<i>Pleurotoma pyramidalis</i> , <i>Ström.</i>	P
„ <i>cinerea</i> , <i>Möll.</i>	P
„ <i>Pengellii</i> , <i>Möll.</i>	P
„ <i>rufa</i> , <i>Mont.</i>	E
<i>Utriculus obtusus</i> , <i>Mont.</i>	E
<i>Cylichna Sarsii</i> , <i>Phil.</i>	
<i>Heterofusus balea</i> , <i>Möll.</i>	O
<i>Clio pyramidata</i> , <i>L.</i>	O
<i>Limacina helicina</i> , <i>Phipp.</i>	O
<i>Clione limacina</i> , <i>Phipp.</i>	O

MOLLUSCA OF THE NORTH SEA.

Lastly, it may be interesting to compare the results of the dredgings of the 'Pommerania,' which were carried on chiefly in the open sea, but also included many near shore hauls both on

the English and Norwegian coasts. The fact that I procured many more species in three weeks near Bergen than the 'Pommerania' was able to collect in twice that time when ranging over the whole of the North Sea, bears witness to the richness of the Bergen Fauna. Moreover, many of the rarer mollusca would have found no place in the 'Pommerania's' list had not that vessel paid a visit to Bergen, when opportunities were taken advantage of by dredging in Kors Fiord and near Bukken. The following mollusca are to be found in Dunker and Metzger's list which are not in the Bergen Fauna.

- ? *Rhynchonella psittacea*, *Chemn.* (fossil). P
- Pecten Islandicus*, *Müller.* P
- Nucula sulcata*, *Brown.* E
- Tellina pusilla*, *Phil.* E
- Donax trunculus*, *Lin.* E
- Mactra solida*, *L.* E
- „ *stultorum*, *L.* E
- Lacuna crassior*, *Mont.* E
- „ *vestita*, *Dunk. & Metz.*
(? is not this crassior).
- Natica catena*, *Da Costa.* E
- Murex erinaceus*, *L.* E
- Fusus ebur*, *Mörch.* P (?)
(=F. *Moebii*, *D. & M.*)
- „ *Jeffreysianus*, *Fischer.* E
- „ *Norvegicus*, *Chemn.* P
- „ *Berniciensis*, *King.* P
- Nassa pygmæa*, *Lam.* P
- Pleurotoma brachystoma*, *Phil.* E
- Clavatulula plicifera*, *S. Wood.*
- Philine catena*, *Mont.* E

Many of the foregoing mollusca were procured near Yarmouth and in other southern localities.

The following authorities have been consulted in the filling in of the last three columns in the tables (p. 16-34):—

MOLLUSCA OF GREENLAND.

(1) Mörch's Catalogue in *Manual and Instructions for the Arctic Expedition, 1875*, p. 124—135. (2) Jeffreys' *Preliminary Report of the Biological Results of a cruise in H.M.S. 'Valorous to Davis Strait in 1875*, (Proc. Royal Soc., 1875, p. 177). Earlier works have also been consulted.

MOLLUSCA OF N. E. AMERICA.

(1) Gould, *Report Invertebrata Massachusetts, edit. ii.*, Binney, 1870. (2) Packard (A. S.), *Observations on the Glacial Phenomena of Labrador and Maine* (Memoirs Boston Soc. Nat. Hist., vol. i. (1867), p. 210). (3) Verrill, various Dredging Papers in *American Journal of Science and Art*, and *Proc. Amer. Assoc. Advancement of Science, 1872—8*, and *Report on the condition of the Sea Fisheries on the South Coast of New England, 1873*, p. 634—698. (4) Whiteaves, *Deep Sea Dredging Reports*, published separately, also *Amer. Jour. Sci. and Arts, vol. vii., March, 1874*, and *Ann. Nat. Hist., Nov., 1872*.

MOLLUSCA OF THE MEDITERRANEAN.

(1) Monterosato, *Nuova Revista delle Conchiglie Mediterranee, 1875*. (2) Jeffreys, *Mediterranean Mollusca* (*Ann. Nat. Hist., July, 1870*).

Corrigenda.—A few errors have been overlooked in revising; the reader is requested to correct the following as the more important:—

P. 15, line 11, for "56 fathoms" read "56 mollusca."

P. 47, line 16, for "*Dentalium abyssorum* var. *agile*, M. Sars" read "*Dentalium entalis* var. *agile*, M. Sars."

P. 47, line 24 and 27, and p. 48, line 8, for "*D. abyssorum*" read "*D. striolatum*."

[The foregoing paper was sent to the printer last September. I afterwards received a copy of the *Mollusca Regionis Arcticæ Norvegiæ** from the author, Professor G. O. Sars. I much regret that this valuable new work was not in my hands when I was drawing up my paper. As it is, I have only inserted a reference to the description of *Cadulus propinquus*; and I may add here that the shell I have recorded as *Decipula ovata*, Jeffreys, MS., is the same as that described by Sars under the name *Tellemya ovalis*, n. sp., p. 341, pl. xxxiii., fig. 1a—c.

Sars' work is admirable; no student of the Boreal and Arctic Fauna can possibly do without it. All the species recorded by me from Bergen, which are not members of the British Fauna will here be found amply illustrated. The genera and species are described in Latin. The work contains thirty-four plates of the mollusca themselves, and seventeen folded (quarto-sized) plates of crowded drawings of the *radulæ* ('tongues') *opercula*, &c. These plates have all been executed by Professor Sars himself, and are engraved by a new autographic process. The figures are simply perfect. Nothing can exceed the accuracy of outline, the softness of finish, yet extraordinary attention to minuteness of detail. There is a great multiplication of genera in this book, for example, the British species of *Chiton* are severed into six genera, the *Trochi* into five, the *Rissoæ* into four, and the *Odostomiæ* (Jeffreys) into six. There cannot be a doubt that the grounds on which many of the genera are separated by the author are valid, but we regret that the process has been carried so far, though with increasing knowledge there has been, and for a long time to come must be, a continual subdivision of groups going on.]

* *Bidrag til Kundskaben om Norges Arktiske Fauna: I. Mollusca Regionis Arcticæ Norvegiæ: oversigt over de i Norges Arktiske Region forekommende Bløddyr* af Dr. G. O. Sars.—Brøgger, Christiania, 1878.

NASSA TRIFASCIATA, Gmelin.

By F. P. MARRAT.

Nassa trifasciata, Gmelin. Part 3489, No. 77 'Gaultieri,' pl. xliv., fig. A.= *rutilans*, REEVE, Con. Icon., pl. xxii., fig. 147.= *unicolora*, KIEN., pl. xix., fig. 69.= *unicolorata*, REEVE, pl. iii., fig. 17.

Looking over the figures in 'Gaultieri,' last night, it occurred to me that I had seen this shell, and after a careful search among my shells of *N. unicolora*, and its broader varieties *N. rutilans*, I found a rather young specimen with the three internal bands, another specimen had only two bands, and the generality of them were uniformly brown or purple-brown. Reeve says this shell is closely allied to the *N. olivacea-tænia*, Gmel., and so it appears to be, but the operculum in my shells of the former are thin and nassoid, while that of the latter is thick and remarkably pisanoid in its character, agreeing with the figure in Quoy and Gaim., 'Voy. de L'Astrolabe,' pl. xxxii., fig. 15.

January, 1879.NOTE ON *NASSA ELEGANS*, Sow.

By F. P. MARRAT.

The history of this shell may serve as a very good illustration of the want of care in the examination of what has been done previously, and how a serious amount of confusion results from the carelessness of these people. The name was applied to a fossil shell, occurring in the Crag, in the Min. Conch., by J. Sowerby, in 1824, pl. ccxlvii., fig. 1. Kiener in his Spec. Coq. Viv. in the collection of Lamarck, has figured in his Genus *Buccinum*, pl. xxiv., fig. 97, another *N. elegans*, Kien. This author has not dated his monographs, which circumstance renders them useless in comparing the dates according to priority.

Reeve in his *Conch. Syst.*, pl. cclxviii., fig. 3, p. 234, has figured another very distinct shell as *Buc. elegans*, Reeve, and again in his *Conch. Icon.*, vol. 8, pl. ii., sp. 10, another shell, *Nassa elegans*, quoting the shell in Kien., with which it has no affinity. With the exception of the first the whole of these names are obsolete in this genus, and the *N. elegans*, Reeve, has, I think, by almost universal consent descended to its next describer, Gould, under the name of *Nassa fossata*, Gould. In the work by H. and A. Adams, 'Recent Shells,' at p. 121, we have the subgenus *Taphon*, H. and A. Ad., and the erroneous name of *T. elegans*, Reeve, still continued, but the synonymic *N. fossata*, Gould, appears under another subgeneric head, at p. 112, as *Tritia fossata*, Gould. After all this we find the *N. elegans*, Reeve, figured in the *Jour. de Conch.* for 1868, pl. vi., fig. 3, and described at p. 445, 1867, as a new species *N. Moreleti*, Crosse.

January, 1879.

NOTE ON THE GEOGRAPHICAL DISTRIBUTION
OF *CREPIDULA ACULEATA*, GMELIN.

BY WM. G. MAZYCK.

In the *Journal* for May, 1878, Mr. Garrett records the occurrence of this species in the Marquesas Islands, and mentions that it has also been found in the Sandwich Islands, New Zealand, Australia, India, Mauritius, Japan, West Indies, Panama and California. It may be interesting to students to know that it also occurs on coast of South Carolina. I have several specimens which I have myself collected on Sullivan's and Long Island beaches. I have not succeeded in obtaining living examples, but do not doubt that they could be readily collected with the aid of a dredge.

February, 1879.

LIST OF THE FRESHWATER SHELLS OF TASMANIA.

By W. F. PETTARD.

In a paper by the Rev. Tennison Woods, read before the Royal Society of Tasmania on the 9th of August, 1875, the author gives a list of the Freshwater Shells of this Island, including the description of many unrecorded species that had been discovered from time to time, but as several of that gentleman's names will have to be replaced by the prior ones given to the same species by Mr. Brazier in the 'Proceedings of the Linnean Society of New South Wales,' and as some very interesting new forms have more recently been discovered by Mr. R. M. Johnston and myself in the northern part of the Island, I undertake the present revision of the Freshwater Shells of Tasmania, as well as to point out several errors that the author has fallen into, which, if my observations are correct, are the more excusable considering that the reverend gentleman had but scant acquaintance with the great majority of the species enumerated in their living state, and was therefore unable to observe the variations in form and colouration and to some extent size a great number of our species are liable in more or less favourable localities for their life. By the present revision there are enumerated in all 36 species of the Freshwater Molluscan Fauna as at present known, but as the greater portion of the Island remains unexamined, a much further increase in the number of species may be confidently anticipated. They are distributed in the following genera:—*Lymnaea*, 3; *Physa*, 9; *Planorbis*, 3; *Ancylus*, 3; *Gundlachia*, 1; *Pomiatopsis*, 1; *Assimineae*, 1; *Ampullaria*, 1; *Valvata*, 1; *Bithynia*, 7; *Amnicola*, 1; *Unio*, 1; *Cyclas*, 1; *Pisidium*, 2.

Although the general character of the great majority is very distinct from those at present known from the mainland of Australia, nevertheless there are several that have a very close resemblance, and it is quite probable are but varieties, or at least

analogous representatives, as all species having an extended range are liable to vary in a more or less prominent and perceptible degree. The following are recorded as common both to this Island and the mainland:—*Bythinia Huonensis*, *B. Dulvertonensis*, *Pomiatopsis striatula*, and a variety of *Physa mamillata*. It must however be remembered that comparatively little has as yet been done in the Freshwater Molluscan Fauna of Australia, so that it is but premature to draw comparisons as to the relation of the one to the other.

1. ***Lymnæa tasmanica***, Tennison Woods. Pro. Royal Soc. Tas., 1875.

Habitat—about Hobart Town. I have little doubt but that this is the well-known European species *L. stagnalis*, introduced with fish ova.

2. ***Lymnæa Huonensis***, Tennison Woods. Pro. Royal Soc. Tas., 1875.

L. Launcestonensis, T. Woods. Pro. Royal Soc. Tas., 1875.

Habitat—Widely distributed both in the northern as well as southern portions of the colony. I have no hesitation in uniting the two species described by the Rev. Mr. Woods, as it is a very variable shell. In a large series of specimens that I have seen from the north, principally collected near Launceston, both the true typical *L. Launcestonensis* and the *L. Huonensis* were equally perceptible, as well as intermediate variations.

3. ***Lymnæa Hobartensis***, Tennison Woods. Pro. Royal Soc. Tas., 1875.

Habitat—Near Hobarton. This may be but a variety of the preceding.

4. ***Physa aperta***, Sowerby. Reeve's Con. Icon., pl. xi., figs. 88a-b.

Habitat—Creeks between Hamilton and New Norfolk.

5. *Physa eburnea*, Sowerby. Reeve's Con. Icon., pl. xi., figs. 89a-b.

Habitat—Creeks near Launceston and George Town.

6. *Physa mamillata*, Sowerby. Reeve's Con. Icon., pl. xi., fig. 90.

P. ciliata, Tennison Woods. Pro. Royal Soc. Tas., 1875.

Habitat—Lake Dulverton; Bruni Island, and Flinder's Island, Bass Straits. A very variable shell both in color, shape, and size. The ciliated appearance is more prominent in immature specimens; it is a character common to almost all the Tasmanian *Physæ*, as well as many of the Australian, more particularly several species I have collected in Victoria. A large series prove the *P. ciliata* to be identical with Sowerby's *P. mamillata*.

7. *Physa nitida*, Sowerby. Reeve's Con. Icon., pl. xii., fig. 98a-b.

Habitat—In creeks, S.E. Tasmania.

8. *Physa tasmanica*, Tennison Woods. Pro. Royal Soc. Tas., 1875.

P. Legrandi, Tennison Woods. Pro. Royal Soc. Tas., 1875.

P. Huonensis, Tennison Woods. Pro. Royal Soc. Tas., 1875.

Habitat—Generally distributed in almost every stream. An extremely variable species. It may be but a variety of the last, which it probably is.

9. *Physa Bruniensis*, Sowerby. Reeve's Con. Icon., pl. xii., fig. 92.

Habitat—Bruni Island. May be but another variety of *P. nitida*.

10. *Physa Vandiemensis*, Sowerby. Reeve's Con. Icon., pl. viii., fig. 57.

Habitat—Near Launceston; George Town. A very distinct species confined to the northern part of the Island.

11. **Physa tasmanicola**, Tennison Woods. Proc. Royal Soc. Tas., 1875.
Habitat—Water-hole, near Mount Murray, East Coast.
12. **Physa Huonicola**, Tennison Woods. Proc. Royal Soc. Tas., 1875.
Habitat—Huon River. A distinct fusiform species.
13. **Planorbis meridionalis**, Brazier. Proc. Linnean Soc. N.S. Wales, March, 1875.
P. tasmanicus, Tennison Woods. Pro. Royal Soc. Tas., August, 1875.
Habitat—Widely dispersed.
14. **Planorbis Atkinsoni**, Johnston. Pro. Royal Soc. Tas., 1878.
Habitat—Near Launceston. A very distinct shell with a peculiarly angled aperture.
15. **Planorbis Scottiana**, Johnston. Pro. Royal Soc. Tas., 1878.
Habitat—Near Launceston. A small black species confined to the North, where it is very plentiful in still water.
16. **Ancylus Cumingianus**, Bourguignat.
Habitat—Streams between New Norfolk and Hamilton.
The largest species known and very distinct from any other form, either Tasmanian or Australian.
17. **Ancylus Woodsi**, Johnston. Pro. Royal Soc. Tas., 1878.
Habitat—Vicinity of Launceston. Mr. Johnston enumerates three varieties of this distinct species—a, b and c. Two are probably distinct, and the third a variation of the next species.
18. **Ancylus tasmanicus**, Tennison Woods. Pro. Royal Soc. Tas., 1875.
Habitat—Vicinity of Hobart Town and Launceston.
A minute dark-coloured and inconspicuous species. The variety from about Launceston is much lighter in color.

19. **Gundlachia Petterdi**, Johnston. Pro. Royal Soc. Tas., 1878.

Habitat—Still water near Launceston. The first of the genus hitherto recorded from Australasia. Generally found attached to aquatic plants, and almost invariably thickly covered with *Diatomaceæ*.

21. **Pomiatopsis striatula**, Meuke. Moll. Nov. Holl., p. 9; Cox, Mon. Australian Land Sh., 1862, p. 95, pl. xv., fig. 13a, b and c.

Habitat—Muddy and Clarence Plains, Flinders Island; also Victoria and South Australia. Mentioned by Cox, in Mon. as a land shell. Mr. Johnston has described a subfossil species, *P. Badgerensis* from the consolidated sand dunes of Badger Island, Bass Strait, having a very close resemblance to the existing species. In the same formation *Helix Wellingtonensis*, *Helix pictilis*, and a species of *Bittium* and *Lymnæa* occur.

22. **Assimineæ tasmanica**, Tennison Woods. Pro. Royal Soc. Tas., 1875.

Habitat—Sorell and Brown River, within the tidal influence of the salt water. This has been redescribed by the Rev. T. Woods, by mistake, as a marine species under the name of *Rissoa* (*Setia*) *siennæ*.

23. **Ampullaria tasmanica**, Tennison Woods. Pro. Royal Soc. Tas., 1876.

Habitat—River, north coast. The examination of the animal will probably necessitate the forming of a new genus for this little species, although the Rev. Mr. Woods seems confident that he assigns it to the right genus by placing it in *Ampullaria*. I have never met with the shell, although I have carefully searched the greater number of the northern streams; it may, however, be local and restricted to one locality which is unknown, for its discoverer, Mr. Gunn, is unable to give the precise habitat.

24. **Valvata tasmanica**, Tennison Woods. Pro. Royal Soc., 1875?

Habitat—Creek in Gould's Country, North-East Tasmania. Resembles in a most striking manner very young specimens of *Amnicola Launcestonensis*, Johnston.

25. **Bithynia Simsoniana**, Brazier, as *Amnicola Simsoniana*. Pro. Linnean Society of N. S. Wales, March, 1875.

Bithynia pontvillensis, Tennison Woods. Pro. Royal Soc. Tas., August, 1875.

Habitat—Jordan River. The whole of the species are but provisionally classed as *Bithynia*, for it may possibly be found requisite to erect a subgenus for their reception.

26. **Bithynia dulvertonensis**, Tennison Woods. Pro. Royal Soc. Tas., August, 1875.

Habitat—Lake Dulverton, Esk River, First Basin, Launceston. The epidermis of silvery scales are probably an encrustation of *Diatomaceæ*.

27. **Bithynia Petterdiana**, Brazier, as *Amnicola Petterdiana*. Pro. Linnean Soc. N. S. Wales, March, 1875.

Habitat—Ringarwina and other parts of North Coast. This may be but a variety of the preceding.

28. **Bithynia Wisemaniana**, Brazier, as *Paludestrina Wisemaniana*. Pro. Zool. Soc. London, 1871.

Bithynia tasmanica, Tennison Woods. Pro. Royal Soc. Tas., August, 1875.

Habitat—Generally distributed in almost all running creeks.

Small variety:—

Bithynia Legrandi, Tennison Woods. Pro. Royal Soc. Tas., August, 1875.

Habitat—Brown River, Launceston.

Carinated variety:—

Bithynia Legrandiana, Brazier, as *Paludestrina Legrandiana*. Pro. Zool. Soc. London, 1871.

Bithynia uncarinata, Tennison Woods. Pro. Royal Soc. Tas., August, 1875.

Habitat—Generally distributed throughout the Island. A very variable shell in colour, size and form, hence the number of species that have been formed. Specimens of all intermediate grades are commonly met with, running so imperceptibly into each other that it is impossible to separate them with anything like satisfaction. I have never met with a shell in which extreme individuals show so much variation. It is generally coated with confervoid growth.

29. *Bithynia Dunrobinensis*, Tennison Woods. Pro. Royal Soc. Tas., August, 1875.

Habitat—River Ouse. Longer and more slender than its congeners.

30. *Bithynia Huonensis*, Tennison Woods. Pro. Royal Soc., August, 1875.

Habitat—Huon River, Sorrel, George Town ; also Melbourne, Victoria. A very different form to any of the other species of the genus; in fact, it is so distinct that I think it requisite to form a genus for its reception. It is of a pyramidal form with an elevated, acuminate spire of a shining, rich brown color.

31. *Bithynia Dyeriana*, n. sp.

Shell minute, turbinately conical, brown, much corroded, spire very obtuse, whorls $4\frac{1}{2}$, rounded, somewhat inflated ; suture impressed ; aperture ovate ; margins continuous.

Habitat—Stream Long Bay (Mr. B. Dyer). The smallest of our species, apparently confined to the locality given when it was got by my friend Mr. Dyer, after whom I have much pleasure in naming it.

32. *Amnicola? Launcestonensis*, Johnston. Pro. Royal Soc. Tas., 1878.

Habitat—First Basin, Launceston. Somewhat plentiful; very distinct from anything previously known.

33. **Unio moretonicus**, Sow.

Habitat—Esk River, and most of the larger streams emptying into Bass Straits. Our only species; abundant in the northern streams but not the southern.

34. **Cyclas tasmanica**, Tennison Woods. Pro. Royal Soc. Tas., August, 1875.

Widely distributed in almost all the streams throughout the Island.

35. **Pisidium Dulvertonensis**, Tennison Woods. Pro. Royal Soc. Tas., August, 1875.

Habitat—Lake Dulverton.

36. **Pisidium tasmanicum**, Tennison Woods. Pro. Royal Soc. Tas., Aug., 1875.

Habitat—In most streams and pools.

In a paper contributed to the Royal Society of Victoria, 9th Aug., 1877, the Rev. J. E. Tennison-Woods describes the following species. The majority of those from Tasmania were collected by me, and form part of a series now in the National Museum of Victoria.

1. *Birostra McCoyi*. Waterhouse, Tasmania.
2. *Olivella Australis*. Clark's Island, Bass Straits.
3. *Mangelia Harrisoni*. „ „
4. „ *trachys*. Brighton, Victoria.
5. *Rissoina Kershawi*. Long Bay, Tasmania.
6. „ *suprasculpta*. „ „
7. *Bittium semilævis*. North-west Tasmania.
8. *Thalobia mariæ*. Port Phillip Heads, Victoria.
9. „ *tesselata*. „ „ „
10. „ *dubia*. Clark's Island, Bass Straits.

11. *Liotia minima*. Long Bay, Tasmania.
 12. *Minolia vectiliginea*, Menke, var. Hobson's Bay, Victoria.
 13. *Tapes Victoriae*. Hobson's Bay, Victoria.
 14. *Circe pythinoides*. „ „
 15. *Arca McCoyi*. Victoria.
 16. *Pectunculus flabellatus*. Spencer's Gulf, S. Australia, and
North Coast, Tasmania.
 17. *Truncatella micra*. Brighton, Victoria.
 18. *Physa crebriciliata*. Victoria.
 19. „ *arachnoidea*. „
 20. „ *Kershawi*. „
 21. *Bythinia Victoriae*. „
- Hobart Town, Tasmania,*
November, 1878.



THE MOLLUSCA OF BARENTS SEA,
BETWEEN SPITZBERGEN AND NOVAYA ZEMBLIA.

By W. S. M. D'URBAN, F.L.S.,

Curator of the Devon and Exeter Albert Memorial Museum.

Understanding that Mr. W. J. A. Grant of Hillersden House, Cullompton, Devon, who had previously accompanied Sir Allen Young in the 'Pandora,' in 1876, to Smith's Sound as photographer, was about to join the Dutch Arctic Exploring Vessel, the 'Willem Barents' with the same office, I requested him to collect any specimens of Natural History that might come in his way, for the Devon and Exeter Albert Memorial Museum, under my charge. Mr. Grant most kindly undertook to do whatever lay in his power, and fulfilled his promise most satisfactorily, as he brought back with him several bottles filled with specimens obtained by dredging in the Barents Sea, between Spitzbergen and Novaya Zembla.

Dr. Gwyn Jeffreys has most obligingly examined and determined all the mollusca in the collection for me, and by so doing has rendered the following lists far more valuable than they would have been had they been founded on the determinations of a less experienced conchologist.

A brief account of the voyage of the 'Willem Barents' may not be out of place by way of introduction to the list of shells collected by Mr. Grant.

The stout little schooner of 79 tons, named after the famous Dutch Arctic Explorer, was only launched on 6th April, 1878, having been built especially for the purpose for which she was to be employed. She left Amsterdam on the 5th May last, under the command of Lieut. A. de Bruyne, of the Dutch Royal Navy, her officers and crew numbering fourteen persons in all. From the 12th to 18th May the vessel was at Bergen in Norway. From thence the adventurous explorers shaped their course to Jan Mayen Island. A fine view of this volcanic Island was obtained on the 9th June, and an illustration of it, taken from a photograph by Mr. Grant, will be found in the "Illustrated London News" for 26th October, 1878. The explorers were prevented from landing by a violent gale, which drove their little vessel from the anchorage. On the 12th June they reached the edge of the West Ice, and running along the line of this, on the 19th of the month they were at the North-western end of Spitzbergen. They worked along the Northern shore of the island until stopped by the ice on the 27th in 80° 18' North Latitude. They then retraced their course and proceeded to Amsterdam Island. Here they tarried a few days to set up a memorial, consisting of an engraved stone slab, in the midst of the ancient Dutch Grave Yard. The 4th July found them on the edge of the West Ice again. They next ran to the South-east, and from the 13th to 16th July were off Bear Island, where dredgings were made in 25 fathoms on the Spitzbergen Bank.

On the 17th and 18th abundance of specimens were obtained in 210 and 220 fathoms, and amongst other things brought up were large individuals of a Foraminifer (*Triloculina tricarinata*, D'Orb.), kindly determined for me by the Rev. A. M. Norman. On the 22nd of July the schooner was at Vardö in Norway, from whence she sailed North-east till the 27th, when she ran almost due North along the 45 meridian until the 1st August. On that day the party encountered the ice in $77^{\circ} 10' \text{ N.}$, but pushed on to $77^{\circ} 51' \text{ N.}$ in $44^{\circ} 20' \text{ E.}$ longitude, where they were stopped by the pack ice. On 31st July, not long before reaching the ice, they dredged in 120 fathoms, obtaining many specimens of *Lima subovata*, Jeffreys, of a very large size. The next day, at the very edge of the ice in 110 fathoms, abundance of animals were brought to the surface, including fishes of the genera *Cottus* and *Agonus*, and small flat-fishes, Prawns, Pycnogonids, *Echini*, *Astrophyton* and other star-fishes. There are, however, no shells amongst the specimens from this station given me by Mr. Grant. The pack ice was skirted toward the west for ten days, and the gallant little vessel narrowly escaped being beset among the heavy west floes of immense thickness. The course was now changed to the South and East, and on the 20th August the 'Willem Barents' entered the mouth of the narrow Matoshkin Strait, which divides Novaya Zembla into two islands, remaining there about five days. Whilst here, Mr. Grant picked up a dead specimen of a variety of *Fusus despectus*, Linné, described and figured by Middendorff as a variety of *F. antiquus* from the White Sea and the coast of Russian Lapland. Proceeding northwards along the west coast of Novaya Zembla, on 3rd September the vessel was off Cape Troost of Barents, and Mr. Grant collected some obscure fossils in Slates and Quartzites at both Penkratjew Island and Cape Troost. The explorers next steered North again, meeting the pack ice once more on 7th September, in latitude $78^{\circ} 17' 7'' \text{ N.}$, and longitude 55° E. , being then just 100 miles from Franz

Joseph Land. From this point the return voyage was commenced, and the schooner arrived at Hammerfest in Norway on the 23rd September, and at Amsterdam on 13th October, after a most interesting and instructive cruise. Important meteorological and magnetical observations were made, deep-sea soundings and serial temperatures were obtained, and specimens of natural history collected whenever opportunity offered. Mr. Grant, notwithstanding the limited space on board the tiny vessel and the almost constant fogs experienced, succeeded in obtaining an excellent series of photographs, two of which are reproduced in the "Illustrated London News" for 25th January last. Dr. Sluyter was the naturalist attached to the expedition, and his collections will be studied at Leyden.

LIST OF SHELLS COLLECTED BY W. J. A. GRANT, ESQ., IN THE SEAS BETWEEN SPITZBERGEN & NOVAYA ZEMBLIA, IN 1871.

Brachiopoda.

Terebratula caput-serpentis, *Linné*.
var. *septentrionalis*.

Conchifera.

Pecten Groenlandicus, *G. B. Sowerby*.
,, *Hoskynsi*, *Forbes*.
Lima subovata, *Jeffreys*.
Modiolaria discors, *L.*
Nucula tenuis, *Mont*.
var. *inflata*, *Hancock*.
Leda pernula, *Müll*.
,, *intermedia*, *M. Sars*.
,, *abyssicola*, *Torell*.
Arca glacialis, *Gray*.
,, *pectunculoides*, *Scacchi*.
Astarte crenata, *Gray*.

Tellina calcarea, *Chemitz.*

Saxicava rugosa, *L.*, var. *præcisa*.

Solenococonchia.

Siphodentalium vitreum, *M. Sars.*

Gastropoda.

Lepeta cæca, *Müll.*

Trochus Groenlandicus, *Chem.*

„ *varicosus*, *Mighels.*

Scalaria Groenlandica, *Chemn.*

Natica affinis, *Gmelin.*

„ *Groenlandica*, *Beck.*

Buccinum undatum, *L.* (young).

Fusus despectus, *L.*, var.

Pleurotoma bicarinata. *Couthony.*

„ *turricula*, *Mont.*, and var. *nobilis.*

Bulla propinqua, *M. Sars.*

The following lists show the species met with at each of the different spots where dredging operations were carried on, and at which Mr. Grant collected specimens. In most cases the latitude and longitude were attached to his specimens, but in one or two instances I have taken them as nearly as I could from a small Dutch map, "Kaart der Noordeluke Ijszee met reisroute der 'Willem Barents,' Kommandant A. de Bruyne, 1878," kindly lent me by Mr. Grant. The depths at which the specimens were obtained have been taken principally from this map, which shows the course sailed over and the spots where dredgings were made, with the depths and other particulars.

14th July, 1878. Lat. 74° 6' N., long. 18° 5' E., off Bear Island; 25 fathoms.

Modiolaria discors, *Linné.*

Nucula tenuis, *Mont.*, var. *inflata*, *Hancock.*

Leda pernula, Müll.

„ *intermedia*, *M. Sars*.

Arca glacialis, *Gray*.

Saxicava rugosa, *L.*, var. *præcisa*.

Trochus Groenlandicus, *Chem*.

Natica affinis, *Gmel*.

Buccinum undatum, *L.* (young).

17th July. Lat. $74^{\circ} 5' N.$, long. $23^{\circ} 0' E.$; 220 fathoms.

Pecten Hoskynsi, *Forbes*; large.

Siphodentalium vitreum, *M. Sars*.

Pleurotoma turricula, *Mont.*, var. *nobilis*.

18th July. Lat. $73^{\circ} 41' 12'' N.$, long. $20^{\circ} 58' 30'' E.$; 210 f.

Terebratula caput-serpentis, *L.*, var. *septentrionalis*.

Pecten Groenlandicus, *G. B. Sowerby*.

„ *Hoskynsi*, *Forbes*; large.

Modiolaria discors, *L.*

Nucula tenuis, *Mont.*

Leda pernula, Müll.

„ *intermedia*, *M. Sars*.

Arca pectunculoides, *Scacchi*; large.

Astarte crenata, *Gray*.

Siphodentalium vitreum, *M. Sars*.

24th July. Lat. $72^{\circ} 5' 6'' N.$, long. $37^{\circ} 57' 18'' E.$; 140 f.

Leda pernula, Müll.

Arca glacialis, *Gray*.

Astarte crenata, *Gray*.

Tellina calcarea, *Chem*.

Saxicava rugosa, *L.*, var. *præcisa*.

Lepeta cæca, Müll.

24 July. Lat. $72^{\circ} 5' 30'' N.$, long. $37^{\circ} 57' 18'' E.$; 145 f.

Arca glacialis, *Gray*.

Astarte crenata, *Gray*.

Saxicava rugosa, *L.*, var. *præcisa*; very large.

Lepeta cæca, *Müll.*

29th July. Lat. $74^{\circ} 6' 42''$ N., long. $45^{\circ} 1' 42''$ E.; 160 f.,
bottom, small stones.

Leda pernula, *Müll.*; very fine.

„ *abyssicola*, *Torell.*

Nucula tenuis, *Mont.*

Arca glacialis, *Gray.*

Siphodentalium vitreum, *M. Sars.*

Trochus varicosus, *Mighels.*

Natica affinis, *Gmel.*

„ *Grœnlandica*, *Beck.*

Pleurotoma bicarinata, *Couthouy.*

Bulla propinqua, *M. Sars.*

30th July. Lat. $75^{\circ} 16' 6''$ N., long. $45^{\circ} 19' 36''$ E.; 160 f.,
bottom, small stones.

Scalaria Grœnlandica, *Chem.*

Bulla propinqua, *M. Sars.*

31st July. Lat. $76^{\circ} 31' 18''$ N., long. $45^{\circ} 36' 30''$ E.
Dredged in sand and mud near the ice, in 130 fathoms.

Lima subovata, *Jeffreys*; many living.

Leda pernula, *Müll.*, var. *falcata*.

„ *abyssicola*, *Torell.*

Arca glacialis, *Gray.*

Saxicava rugosa, *L.*

Buccinum undatum, *L.*; an egg capsule.

20th August. Matoshkin Strait, Novaya Zembla; on the shore.

Fusus despectus, *L.*; dead.

February, 1879.



NOTES ON A FEW TASMANIAN LAND AND FRESH-WATER SHELLS.

BY W. LEGRAND.

There are two *Helices*—*H. bisulcata* and *H. subangulata*—described and figured in 'Conchologia Iconica' as Tasmanian, of which nothing is known here. Mr. Gunn, on whose authority they are given, can give no information respecting them. The first, *H. bisulcata*, has some general resemblance to *H. Launcestonensis*, Reeve, of which it may possibly be a monstrosity ; but the second has nothing Tasmanian about it, either in form or coloring. The types of both are in the British Museum collection.

Two British *Helices* have found their way here—*H. cellaria*, described by Cox as *H. Sydneyensis*, and *H. costata*, also described by him as *H. Alexandræ* ; the first also common to N. S. Wales and New Zealand, the second I have only received from Sydney and its neighbourhood. *H. aspersa* seems working its way here ; I have received it from Mauritius, and Auckland, New Zealand, where it is very common, and Mr. Beddome has received it from Victoria, so that its reaching here seems merely a question of time.

Limnæa Tasmanica, Woods, is very similar to, if not identical with, the British species *L. stagnalis*, and *Ancylus Cumingianus* is without question the finest species of the genus. Several years since I sent it to Mr. Hanley, who proposed for it a new subgenus *Legrandia*, but as I found that Bourguignat had described it in "Zoological Proceedings," and had erected a subgenus, *Ancylastrum*, for it, I have not made use of Mr. Hanley's name. We have one or two other species of *Ancylus*, but there is nothing peculiar about them.

Our *Vitrina Milligani* (if it belongs to the genus, which seems doubtful, as the animal has not been examined) was, until the discovery of *V. superba* in Queensland, the finest species of

the genus. Albers classes it (from the shell only) with the New Zealand *H. Busbyi* and Victorian *H. atramentaria* under the subgenus *Paryphanta*, perhaps it may turn out to be something between *Helix* and *Vitrina*.

I tried unsuccessfully to procure specimens of *Gundlachia* from Cuba and California, both of which places have credit for this genus. I little thought to find it so near home. An undoubted one has been discovered near Launceston by Mr. W. F. Petterd.

We have several *Bythinellas*, one of which, *B. Huonensis*, Mr. Woods has made the type of a new sub-genus *Tatea*.

I may possibly make some of our marine species the subject of another paper.

January, 1879.



COLONISING LAND SHELLS.

By W. F. PETTERD.

The following species of Land and Freshwater Shells have been introduced into Australia, and are now thoroughly acclimatised. Possibly other species have been imported that I have not met with.

1. *Helix aspersa*. In great abundance around the suburbs of Melbourne, Victoria. Mr. J. S. Gibbons ('Quarterly Journal of Conchology,' August, 1878) records its introduction in Brazil, St. Helena, and the Cape of Good Hope. My friend Mr. C. E. Beddome has recently placed some living specimens in the Scrub, near Hobart Town, so that in a few years it may be equally as abundant in this island as on the mainland.
2. *Helix cellaria*. In great profusion in the streets, cellars, and such like places in Launceston and Hobart Town, Tasmania; also Auckland, New Zealand, and Sydney, Australia.

Mr. Gibbons states that it occurs at St. Helena, Madeira and the Cape of Good Hope.

Dr. Cox, in his 'Monograph of Australian Land Shells,' quotes it as a new species under the name of *H. Sydneyensis*. I have carefully examined vast numbers and cannot detect any variation from the typical European form. Under the name of *H. cellarius* I include it in my 'Monograph of Tasmanian Land Shells,' recently read before the Royal Society of Tasmania.

3. ***Helix costata***. Suburbs of Sydney, New South Wales, and gardens about Hobart Town, Tasmania. Described by Dr. Cox under the name of *H. Alexandræ*. About Hobart Town it is often met with, and is becoming more plentiful and diffused every year.
4. ***Bulimus acutus***. I recently had sent me some fine specimens of this shell collected near Melbourne, Victoria.
5. ***Helix similaris***. This has been obtained in great quantity in Guilfoyles Nursery, near Sydney, New South Wales. It appears to be a great wanderer, for Dr. Cox states that it has been collected in Cuba, Brazil, Reunion, Mauritius, Natal, Java, Bengal, China and the Sandwich Islands.
6. ***Planorbis lacustris***. In the freshwater streams near Melbourne, Victoria, this shell is plentiful. It is a highly polished, yellow variety. It is difficult to account for its introduction; doubtless the land species have been imported among soil with plants, but I cannot understand how the freshwater shell could find its way to the antipodes.
7. ***Limnæa stagnalis***. I was informed some years ago that the common large *Limnæa* in the streams around Hobart Town was this European species imported. It certainly resembles it in a most striking manner, and I think eventually

it will turn out to be the same, although the Rev. J. E. T. Woods has recently described it as new, under the name of *L. tasmanica*.

November, 1878.

TESTACELLA MAUGEI IN JERSEY.

By MARTIN M. BULL, F.R.C.P.L.

In April, 1878, I found a *Testacella* crawling on a path at the foot of a low walk surmounted by a hawthorn hedge. The local conchologists had not met with it; but on enquiry I learned that it had for some years been met with occasionally, about four inches under the surface, in a dry bank about half a mile from my locality. A specimen was brought me from thence shortly afterwards.

Keeping my eye on my own locality, I met with a second specimen in November. M. Duprey, fils, to whom I gave it, thought from the size of the shell that it might be *Testacella Maugei*.

I saw a third last month, crawling on the same path, at 2 p.m., the others having been found at 9 a.m. I took it indoors, when it presently emitted a mass of frothy mucus like soapsuds, equalling about one-tenth of the bulk of its body, from under the anterior margin of its shell. This led me to suppose that the opening into the pulmonary sac must be in that situation, as I did not see by what other mechanism such a mass of air-bubbles could be produced. Being myself unacquainted with the anatomy of mollusca, I communicated with the author of 'British Conchology,' and sent the slug alive to him. Mr. Jeffreys informs me that—"it is unquestionably *Testacella Maugei*," and that I am "quite right as to the position of the respiratory sac."

Jersey, March 4, 1879.

COMPARISON OF *OMALONYX UNGUIS*, D'ORB.,
WITH *O. FELINA*, GUPPY.

By J. S. GIBBONS, M.B.

Last year I discovered in Demerara an *Omalonyx* that was pronounced by Mr. Guppy to be identical with the Trinidad species *O. felina*. I have since collected the *O. unguis* of D'Orb. at Bahia, and I find (contrary to my expectations) that there is a decided difference between the two, but of a comparative nature only.

The soft parts of *O. unguis* are as follows:—Body, when moderately extended, cylindrico-lanceolate, high and truncate in front, broad opposite the shell, and tumid, sloped and tapering towards posterior end, which is somewhat acutely pointed; margins of foot opposite the shell a little expanded; the surface is irregularly and sparingly granulate, lubricated, shining; mantle thickish, prolonged a little over dorsum, and investing edge of shell for a short distance; tentacles, upper pair conical, shortish, thick and somewhat triangular at the base, where they arise close together, bulbs blunt and rather thick; lower tentacles cylindrical, very short and thick; color of animal opaque, greyish-white, often with a yellowish tinge, speckled with faint cinereous grey spots, sometimes few, occasionally nearly absent; a couple of broad longitudinal streaks of dark purplish brown pass from each end of the shell to the anterior and posterior extremities of the animal (in the latter case converging to the lip, in front passing to the base of the upper tentacles, and thence up to the bulbs); the shell is situated in the middle of the dorsum, the spire directed backwards; under the spire and easily seen through the transparent shell, there is a dark brown patch from which three or four streaks of the same color radiate to the anterior margins of the shell.

Length about $1\frac{1}{2}$ in., by $\frac{5}{8}$ in. in breadth.

Omalonyx felina (as observed in Demerara) differs from the above in being somewhat smaller and more tumid, and in having the posterior end more abruptly pointed; the spots too are larger, darker, and more numerous, and consequently the longitudinal streaks appear less prominent.

The shell is distinguishable from that of *O. unguis* by its more oval and less oblong shape, by being flatter and more depressed, and by having the spire smaller, less twisted, and altogether more rudimentary; viewed from below, less of the spire is visible than in the other species; lastly there is a difference in the color, *O. unguis* being a bright amber, while this is more of a dull greyish straw color.

Mr. Guppy's description of the Trinidad mollusc was originally published in the 'Proceedings of the Scientific Association of Trinidad' (Dec., 1872); as this publication may not be easily accessible to some of the readers of this journal, and as Mr. Guppy's remarks are of very great interest, I take the liberty of extracting the following. At page 4 he says:—"I have been favoured by Governor Rawson, C.B., with a specimen of *O. unguis*, Fér., from Guadelupe. That shell is faithfully represented in 'Woodward's Manual of the Mollusca' (pl. xii., fig. 24), and it scarcely differs from the Trinidad form. I do not know the soft parts of the Guadelupe mollusc, but it appears to me that a question here arises—the soft parts of *O. unguis*, as figured by D'Orbigny, are different from the Trinidad mollusc. D'Orbigny's animal was from South America, but Férussac's type appears to have been the Guadelupe shell. It may then possibly turn out that D'Orbigny's species is not the same as Férussac's. Should the latter prove to be identical with the Trinidad shell, the name given by me must be abandoned, and a new appellation given to D'Orbigny's; but it is not improbable that all three are really distinct, for in a group like *Omalonyx*, where the shells are rather deficient in very marked characters, it may easily be that

"the specific differences are not so easily impressed upon the shell as upon the soft parts."

From the above it seems evident that the species found by D'Orbigny in Bolina and collected by me in Bahia, is not the *O. unguis* of Férussac; whether the Trinidad and Guadelupe molluscs are one species is a point not yet, I believe, settled.

The figure in Woodward would answer to either species collected by me, except in regard to the spire, which is too prominent for *O. felina*, but exactly represents that of the Bahia shell.

Mr. Guppy, when separating the Trinidad *Omalonyx* as a distinct species, seems to have been guided more by the soft parts than by the shell. It is in the shells however that the chief distinction lays—the difference in the animals depending on characters that are liable to considerable variation, *e.g.*, the shape and degree of convexity of the body will be found to alter according as the animal is more or less extended.

According to Mr. Guppy's observations the mantle of *O. felina* is reflected over the shell, often completely covering it, but occasionally retracted so as to expose the central portion. I have repeatedly looked for this expansion of the mantle, both in the Demerara mollusc and in the Bahia species, but although I kept specimens alive for some time, I never saw more than a limited portion of the margin of the shell enveloped.

The eggs of *Omalonyx*, deposited at Bahia in the month of September, bear a considerable resemblance to those of our larger English slugs, having a semipellucid membranous capsule.

November 15th, 1878.



NEW SPECIES OF TASMANIAN MARINE SHELLS.

By W. F. PETTERD.

In the 'Proceedings of the Royal Society of Tasmania' the Rev. Mr. Woods has described a large number of new species of marine shells, including over 60 species from my collection, and subsequently the same gentleman compiled a census of the species known up to that time. Although of such recent date I have already met with several new species, the majority of which I now describe. The species do not present any very noticeable departure from the already recorded forms peculiar to this island. The most worthy of special notice is a new *Schismope*, very different from the other Tasmanian species described by Mr. Woods as *S. Atkinsoni*, and a species of *Tornatella*, a genus heretofore not known to exist here, and although of very small size is worthy, on that account, of notice.

There is little doubt that much remains to be done in the marine shells of the island, and as dredging researches proceed, our knowledge will thereby be much augmented, and it will in all probability be found that our present knowledge gives but a scant idea of the mollusca of this province.

In future numbers of this journal I hope to have the pleasure of bringing under the notice of its readers much additional information respecting the described species, and notices of those that I may meet with that are not recorded.

(Dimensions in French millimetres).

1. *Daphnela Kingensis*, n. sp.

Shell fusiform, somewhat solid, pale brown, slightly polished; whorls 6, distantly ribbed and regularly transversely striate, striæ passing over the ribs; last whorl large, faintly ribbed at the suture, transverse and faintly longitudinally

striate; spire obtuse; apical whorls smooth; suture impressed; aperture elongately ovate, half the length of the shell; labrum thickened; sinus inconspicuous.

Long. 13, lat. 5 mil.

Habitat—King's Island, Bass Straits.

A shell with much the appearance of *D. Varix*, T. Woods, but much more narrow and fusiform; the aperture is also shorter, and the body-whorl is faintly tuberculate at the suture.

2. **Cythara MacCoyi**, n. sp.

Shell fusiformly turretted, whitish; spire same length as aperture; whorls $6\frac{1}{2}$, convex, somewhat inflated; elegantly ribbed, becoming gradually obsolete at the base and transversely liræ; liræ broad, flatly rounded, equalling the interstices passing over the ribs; aperture ovate, outer lip thin.

Long. 10, lat. $4\frac{1}{2}$ mil.

Habitat—Brown River.

Allied to *C. tasmanica* of Tennison Woods, but more inflated and with the ribs liræ.

3. **Gibbula tasmanica**, n. sp.

Shell turbinately conical, perforate, greenish white; spire small; whorls $4\frac{1}{2}$, bluntly angled at the periphery, base rounded, girdled with regular rounded fine liræ above and below; aperture rounded, joined by a thin callus, interior iridescent with red and green.

Long. 6, lat. $5\frac{1}{2}$ mil.

Habitat—Brown River.

A single specimen obtained in the dredge at 5 fathoms. Its nearest approach is *C. aurea*, T. Woods, but from which it may be easily known by attending to diagnosis as given above.

4. **Fossarina Legrandi**, n. sp.

Shell small, depressly globose, thin, highly polished, translucent, rich brown; spire minute, very little elevated; whorls $3\frac{1}{2}$, suture much impressed; aperture inflately lunate, tinged white and faintly dilate at the inner portion.

Diam. 2, long. 2 mil.

Habitat—Circular Head and Kings Island, Bass Straits.

A minute polished shell; in shape somewhat resembling *F. Petterdi*, Crosse, but the coloration and extreme polish is totally different from that shell. It is rarely met with, and then only dead specimens.

5. **Columbella alba**, n. sp.

Shell attenuately fusiform, shining, white faintly tinged with chesnut, regularly transversely striate all over; whorls 6, flatly convex; aperture narrowly ovate, inner portion faintly thickened, outer lip thin.

Long. 7, lat. 3 mil.

Habitat—Blackman's Bay.

A very distinct species from any form heretofore recorded from this island; the regular transverse striæ is a character by which it can be easily recognised.

6. **Schismope tasmanica**, n. sp.

Shell minute, obliquely globose, perforated, thin, white, somewhat shining; spire scarcely raised, minute; whorls $3\frac{1}{2}$, last much inflated, perforation deep, margined with a prominent ridge which is faintly serrated; obscurely irregularly striate all over; sinus deeply open, fascia of which forms a deep groove encircling body whorl; aperture rounded, inner lip faintly dilate, labrum thin, acute.

Long. 2, lat. 2' mil.

Habitat—Blackman's Bay.

The second species discovered here; it may be easily known from the first, *S. Atkinsoni*, T. Woods, by the smooth

globose form and color. I have only collected two specimens in shell sand at the locality given.

7. *Tornatella minuta*, n. sp.

Shell minute, ovate, white, shining, pellucid; spire small; whorls 4, flattened, apex mammilate; transversely striate with fine waved striæ, and faintly longitudinally striate; aperture long, narrow, expanded at base; columella fold conspicuous; outer lip a little thickened.

Long. 2, lat. 1 mil.

Habitat—Forneaux Group, Bass Straits (R. M. Johnston).

A minute, polished shell belonging to a genus new to Tasmania. Obtained with *Truncatella tasmanica*.

Hobart Town, Tasmania.

August 3, 1878.

ANNOTATED CATALOGUE OF THE SPECIES OF
CYPRÆIDÆ COLLECTED IN THE S. SEA ISLANDS.

By ANDREW GARRETT.

Every species enumerated in the following catalogue was collected by the writer during many years devoted to a conchological exploration of the Polynesian Islands.

The groups explored, ten in number, are divided into Eastern and Western Polynesia; though in an ethnological point of view the Viti Islands would be excluded; being, in fact, the eastern limits of Melanesia or Australasia.

Having noticed so many errors in the localities of South Sea shells, as recorded by different authors, I have thought it advisable, in order to ensure accuracy, not to cite a single writer on the subject, but, as above stated, enumerate only the species and localities actually discovered by myself.

Further research will undoubtedly extend the range of some of the species, and perhaps add a few more to the list.

			Viti Islands.	Tonga Isls.	Samoa Isls.	Kingsmill Isls.	Caroline Isls.	Cook's Isls.	Society Isls.	Paumotu Isls.	Marquesas Isls.	Sandwich Isls.
1	<i>Cypræa annulus, Lin.</i> ...	...	x	x	x	x	x					
2	" <i>Arabica, Lin.</i> ...	...	x	x	x	x	x		x	x		
3	" <i>argus, Lin.</i> ...	...	x	x	x	x	x					
4	" <i>arenosa, Gray</i> ...	...						x	x	x		
5	" <i>asellus, Lin.</i> ...	...	x	x	x							
6	" <i>aurantia, Mart.</i> ...	...	x	x			x		x			
7	" <i>carneola, Lin.</i> ...	...	x	x	x	x	x	x	x	x	x	
8	" <i>cylindrica, Born.</i> ...	...								x		
9	" <i>candida, Pease</i> ...	...				x						
10	" <i>caurica, Lin.</i> ...	...	x	x	x	x	x	x				
11	" <i>clandestina, Lin.</i> ...	...	x	x	x	x	x					
12	" <i>compta, Pease</i> ...	...				x						
13	" <i>cribraria, Lin.</i> ...	...			x	x						
14	" <i>Cumingii, Gray</i> ...	...							x	x		
15	" <i>caput-anguis, Phil.</i> ...	...									
16	" <i>caput-serpentis, Lin.</i> ...	...	x	x	x	x	x	x	x	x	x	
17	" <i>cruenta, Gmel.</i> ...	...				x	x					
18	" <i>eburnea, Barnes</i> ...	...	x									
19	" <i>erosa, Lin.</i> ...	...	x	x	x	x	x	x	x	x	x	
20	" <i>errones, Lin.</i> ...	...	x	x	x	x	x			x		
21	" <i>esontropia, Duclos</i> ...	...				x		x		x		
22	" <i>felina, Gmel.</i> ...	...	x									
23	" <i>fimbriata, Gmel.</i> ...	...	x	x	x	x	x	x	x	x		x
24	" <i>fuscomaculata, Pease</i> ...	...	x	x	x	x						
25	" <i>Gaskoinii, Reeve</i> ...	...						x	x	x		
26	" <i>Goodallii, Gray</i> ...	...						x	x	x		
27	" <i>hirundo, Lin.</i> ...	...	x	x	x	x						
28	" <i>helvola, Lin.</i> ...	...	x	x	x	x	x	x	x	x	x	x
29	" <i>irrorata, Sol.</i> ...	...						x	x	x		
30	" <i>isabella, Lin.</i> ...	...	x	x	x	x	x	x	x	x	x	x
31	" <i>intermedia, Gray</i> ...	...				x	x	x	x	x	x	x
32	" <i>lynx, Lin.</i> ...	...	x	x	x	x	x	x	x	x	x	x
33	" <i>Mauritiana, Lin.</i> ...	...	x	x	x	x	x	x	x	x	x	x
34	" <i>moneta, Lin.</i> ...	...	x	x	x	x	x	x	x	x	x	x
35	" <i>mappa, Lin.</i> ...	...	x	x	x	x	x	x	x	x	x	x
36	" <i>microdon, Gray</i> ...	...	x	x	x							
37	" <i>obvelata, Lam.</i> ...	...						x	x			

			Viti Islands.	Tonga Isls.	Samoa Isls.	Kingsmill Isls.	Caroline Isls.	Cook's Isls.	Society Isls.	Paumotu Isls.	Marquesas Il.	Sandwich Isls.
38	"	poraria, <i>Lin.</i> ...	x	x	x	x	x	x	x	x		x
39	"	propinqua, <i>Garr.</i> ...							x	x		
40	"	punctata, <i>Lin.</i> ...	x	x	x			x	x	x		
41	"	quadrimaculata, <i>Gray</i> ...	x									
42	"	reticulata, <i>Mart.</i> ...				x		x	x	x	x	x
43	"	rhinoceros, <i>Souv.</i> ...	x		x							
44	"	scurra, <i>Chem.</i> ...	x	x	x	x	x	x	x	x	x	x
45	"	stolida, <i>Lin.</i> ...		x	x							
46	"	semitplota, <i>Migh.</i> ...										x
47	"	sulcidentata, <i>Gray</i> ...										x
48	"	tabescens, <i>Sol.</i> ...						x	x			
49	"	talpa, <i>Lin.</i> ...	x	x	x	x	x	x	x	x		x
50	"	testudinaria, <i>Lin.</i> ...	x	x	x	x	x	x	x			
51	"	teres, <i>Gmel.</i> ...								x		
52	"	tessellata, <i>Sow.</i> ...										x
53	"	tigris, <i>Lin.</i> ...	x	x	x	x	x	x	x	x	x	x
54	"	ursellus, <i>Gmel.</i> ...	x	x	x	x	x					
55	"	unifasciata, <i>Mighels</i> ...							x			x
56	"	ventriculus, <i>Lam.</i> ...	x	x	x	x	x	x	x	x		x
57	"	vitellus, <i>Lin.</i> ...	x	x	x	x	x	x	x	x	x	x
58	"	sp. ...				x						
59		<i>Cypræovula Adamsonii, Gray</i> ...							x	x		
60		<i>Trivia annulata, Gray</i> ...	x	x	x	x		x	x	x		
61	"	<i>Childreni, Gray</i> ...		x	x	x		x	x	x		
62	"	<i>consobrina, Garr.</i> ...	x		x							
63	"	<i>corrugata, Pease</i> ...							x	x		
64	"	<i>cicercula, Lin.</i> ...	x	x	x	x	x	x	x	x		x
65	"	<i>exigua, Gray</i> ...		x	x	x	x	x	x	x		x
66	"	<i>globulus, Lin.</i> ...	x	x	x	x	x	x	x	x		x
67	"	<i>insecta, Mighels</i> ...				x		x	x	x		x
68	"	<i>limacina, Lam.</i> ...	x		x							x
69	"	<i>margarita, Sol.</i> ...							x	x		
70	"	<i>Madagascarensis, Gmelin</i>										x
71	"	<i>nucleus, Lin.</i> ...	x	x	x	x	x	x	x	x		x
72	"	<i>oryza, Lam.</i> ...	x	x	x	x	x	x	x	x		x
73	"	<i>staphylea, Lin.</i> ...	x	x	x	x	x	x	x	x		x
74	"	<i>sphærula, Mighels</i> ...							x	x		x
75	"	sp. ...							x			

SUMMARY.

Western Polynesia.

Viti Islands	...	...	...	...	44	species.
Tonga Islands	...	...	...	...	36	"
Samoa Islands	...	...	...	...	41	"
Kingsmill Islands	...	...	...	...	43	"
Caroline Islands	...	...	...	...	32	"

Eastern Polynesia.

Cook's Islands	...	...	...	...	36	species.
Society Islands	...	...	...	...	45	"
Paumotu Islands	...	...	...	...	43	"
Marquesas Islands	...	...	...	...	13	"
Sandwich Islands	...	...	...	...	31	"

In Western Polynesia we obtained 53 species, 18 of which did not occur to our notice in the Eastern groups.

Eastern Polynesia yielded 56 species, 20 of which we did not observe in the Western Islands.

Owing to the almost total absence of coral reefs at the Marquesas, we find but few species, though a more careful exploration will undoubtedly add some, but not many more, to the 13 recorded from that group.

1. **C. (Aricia) annulus**, Lin. This common and well-known species occurs on reefs and weedy bottom in shallow water. Though plentiful in all the Western groups, it did not occur to our notice in any part of Eastern Polynesia, where it is represented by the closely allied *C. obvelata*.
2. **C. (Aricia) Arabica**, Lin. Common under dead coral on reefs at the Viti, Tonga, and Samoa Islands, and more rare at the Kingsmill and Caroline groups. At the Society and Paumotu Islands we obtained several examples, which were larger, more depressed, the teeth coarser, the aperture more open, and the round spots more conspicuous than in Western specimens.

3. **C. Argus**, Lin. This beautiful cowry is really a scarce South Sea shell. It is confined to the Western groups, and inhabits deep water outside the reefs. The animal is quite unknown to me.
4. **C. (Aricia) arenosa**, Gray. The Paumotus' are evidently the metropolis of this species, where it is far more abundant than at the Cook's or Society Islands. They are found on the outer reefs. As far as we know, it is confined to South Eastern Polynesia.

The young exhibit the same, but more conspicuous, fasciation as seen in the adult shells.

Dillwyn, in his remarks on *C. carneola*, says—this is the shell that Lamarck described under the name of *C. sordida*; if so, the latter has precedence over Gray's name.

5. **C. asellus**, Lin. This small species only occurred to our notice at the Viti, Tonga and Samoa Islands, where we obtained a few examples from the underside of clumps of dead coral on reefs.
6. **C. (Luponia) aurantia**, Martyn. We obtained this rare and costly species at the Viti, Caroline and Society Islands, where they live in deep water outside the reefs. The animal is probably unknown. Besides the three above localities, it has been found at the Pelew Group. The old authors erroneously cited New Zealand and the Friendly Islands—Tonga as its habitat.

They are highly prized by the natives, who consider them regal ornaments, and as such are worn suspended on the necks of the high chiefs. In the Viti Group, where they are an article of traffic, they are by the traders valued at 25 dollars a pair. At the Society Islands they are so excessively rare that I have known a native to refuse the above amount for a single shell.

7. **C. carneola**, Lin. Not uncommon on reefs, and diffused all through Polynesia. Our largest and finest examples were obtained at the Paumotu Islands.
8. **C. cylindrica**, Born. A very rare species, found washed up on the sands at the Paumotu Islands.
9. **C. (Luponia) candida**, Pease. We obtained Mr. Pease's type specimens at Apiang, one of the Kingsmill Islands, where they were found washed up on the lagoon sands. When they passed into Mr. Pease's possession I supposed them to be slightly worn specimens of *C. clandestina*.
10. **C. (Luponia) caurica**, Lin. Not uncommon under stones inside the reefs, and occurs at all the Western groups. At Rarotonga, one of the Cook's Islands, we found a single beach-worn specimen.
11. **C. (Luponia) clandestina**, Lin. This is comparatively a rare species, and only occurred to our notice in Western Polynesia, where we found a few examples in shallow water on sandy flats.

The three transverse bands and hair-like lines are sometimes quite obsolete, and may possibly prove to be identical with *C. candida*, Pease.

12. **C. (Luponia) compta**, Pease. This seems to be a rare species. We found a single specimen on the lagoon sands at the Kingsmill Group. Mr. Pease's type specimen was obtained at Phoenix Island, east of the former group.
13. **C. (Luponia) cribraria**, Lin. This also seems to be a somewhat rare species, and was only found at the Kingsmill and Caroline Islands, where we obtained three examples from the under side of blocks of dead coral on the outer reefs.
14. **C. (Luponia) Cumingii**, Gray. I record this species on the authority of Mr. Pease, who says he found it in a lot of

Paumotu and Society Island shells I collected many years ago. I believe Gray's type specimens were collected by Mr. Cuming on the reefs at Raiatea, one of the latter group.

15. **C. (Aricia) caput-anguis**, Phil. This common shell, which is chiefly confined to the Sandwich Islands, is usually cited as a variety of *C. caput-serpentis*; but is, I think, sufficiently distinct to rank as a separate species. As compared with the latter, it is generally smaller, darker colored, the sides less dilated, and the dorsal spots not so large.

The animal has a dark-brown mantle, varied with dark green, and garnished with red or red and white, more or less divided processes. The siphon is dusky-slate, tentacles brown with white bases, and the foot dusky slate with a paler creeping disk.

16. **C. (Aricia) caput-serpentis**, Lin. Common on reefs at all the groups, except the Sandwich Islands, where it is replaced by the preceding species. Young shells are marked with a conspicuous median brown band.
17. **C. (Luponia) cruenta**, Gmel. A very rare species, found on the outer reefs at the Kingsmill and Caroline Islands.
18. **C. (Luponia) eburnea**, Barnes. This elegant species, which only occurred to our notice in the Viti Group, is restricted to certain localities where it is not uncommon. They were found between tide marks on sandy-mud, having no doubt come up from deep water to deposit their ova.
19. **C. (Luponia) erosa**, Lin. Not uncommon at all the groups, but did not observe it at any of the Marquesas Islands. They are usually found under dead coral inside the reefs.

The animal, when fully expanded, is really a beautiful object. The mantle is cinereous, clouded with dusky, veined with black and white, and ornamented with numerous simple and branched processes of a greyish hue, annulated with

opaque-white, and tipped with vermilion-red. The dusky-grey siphon is dotted with diluted white, and the end is fringed with short, blunt, pink tentacular processes. The upper surface of the foot is delicately marbled with light brown and ochre-yellow. Head tinged with cherry-red.

20. **C. (Luponia) erroneus**, Lin. Common under dead coral in both outer and inner reefs at the Viti Islands, but less abundant at all the other western groups. Two examples found at Kaukura, one of the Paumotu Islands, are of a more robust shape than western examples.

They vary considerably in the convexity of the dorsal region, and about one in ten exhibits the large spot on the back. They are frequently marked with three wide transverse bands which are a little darker than the ground color, which latter is somewhat variable. The young are bluish-grey, freckled with olive yellow, and the apex black.

21. **C. (Luponia) esontropia**, Duclos. A very rare species, found washed up on the beaches at the Kingsmill, Cook's and Paumotu Islands.
22. **C. (Luponia) felina**, Gmel. This also seems to be a rare species, and was obtained only at the Viti Islands, where we found several specimens on sandy-mud between tide marks.
23. **C. fimbriata**, Gmel. This small species, though diffused nearly all over Polynesia, is not by any means common. We obtained living examples beneath dead coral on the outer reefs. The young exhibit four indistinct, pale yellowish-brown bands.

The animal is cherry-red, with a paler creeping disk, and the cinereous siphon is anteriorly fringed. The mantle is ornamented with simple, scattered, pale tentacular processes.

24. **C. (Luponia) fuscomaculata**, Pease. A rather rare species confined to Western Polynesia, where it represents the closely

allied Eastern *C. Goo lalli*. The only essential distinguishing character is the terminal brown spots in the former species.

We obtained Mr. Pease's type specimens on the outer reefs at the Kingsmill Islands.

- 25 **C. (Luponia) Gaskoinii**, Reeve. A somewhat rare species, found washed up on the sands at the Paumotu, Society and Cook's Islands. The single specimen obtained at the latter location is nearly twice the size of those obtained at the two former groups. Young shells are pure white.
26. **C. (Luponia) Goodalli**, Gray. More common than the preceding, and occurs under dead coral on the outer reefs at the same localities. The young shell is also pure white.

The animal is creamy-white, the upper surface of the foot and mantle dotted with brown. Tentacles yellowish with brown bases. Siphon simple, and the mantle is furnished with small remote dendritic processes.

27. **C. hirundo**, L. A few examples obtained at each of the western groups, under dead coral on the inner margins of the outer reefs.
28. **C. (Luponia) helvola**, L. More or less abundant at all the groups, and are found lurking under dead coral on the outer reefs.

The animal has a brownish-red mantle, which is minutely flecked with greenish-white, and garnished with numerous, more or less divided, lighter-colored processes, which are dotted with vermilion-red. Siphon dotted with light yellow, veined with cherry-red. The foot is pale luteous, mottled with cherry-red; tentacles of the latter hue.

29. **C. irrorata**, Sol. Very abundant washed up on the outer beaches at the Paumotu Islands, but rare at the Society and Cook's groups. Not having found any living examples we suppose they live in deep water on the outer margin of the reefs.

It is very abundant at Swain's Island in Western Polynesia.

Young shells have a single, narrow, sub-median band, a little darker than the ground color.

30. **C. Isabella**, L. Occurs in more or less abundance, under stones in sheltered localities, and ranges all through Polynesia. They vary considerably in the size of adults; examples now before me average from 11 to 40 mill. in length, and vary in the ground color. One fine example in my possession is tawny-buff yellow, with the interrupted dorsal lines nearly obsolete. All are faintly marked with three transverse bands.

The animal is deep black, with a brown-black mantle, which, instead of being garnished with the usual tentacular processes, is simply roughened with fleshy granules. The short siphon is also without the usual terminal fringe.

31. **C. (Aricia) intermedia**, Gray. This species, which is frequently confounded with *C. reticulata*, Martyn, is nevertheless quite distinct. It is more abundant at the Paumotu and Society Islands than elsewhere. In Western Polynesia we detected it at the Kingsmill and Caroline Islands, and found a single specimen at Guam.

As compared with *C. reticulata*, they are always smaller, the base whiter, teeth less numerous, and are destitute of the large spot on the face of the shell, which is an essential character in Martyn's species. The young shells invariably exhibit a single, wide, median transverse band, whilst *C. reticulata* of the same age shows four narrow bands.

Usually found under coral on the outer reefs.

The animal has a tawny foot, shaded above with slate, and the siphon and tentacles of the latter hue. Mantle brownish-slate garnished with small, conical, pale papillæ.

32. **C. (Luponia) lynx**, L. This common species occurs in shallow water inside the reefs, and, excepting the Marquesas,

ranges all through Polynesia. They vary much in size and color.

33. **C. (Aricia) Mauritiana**, L. This fine but common cowry is more or less abundant at all the South Sea groups, and more plentiful at the Marquesas than elsewhere. At the Society Islands they are very rarely found. During two years' collecting in the Viti Group we obtained it in but one locality, Lanthala Island, where we found a single colony of about a dozen individuals of different ages under a huge block of coral on the shore or fringing reef. We found it abundant and very large at the Benin Islands, a small group about midway between Guam and Japan.
34. **C. (Aricia) moneta**, L. Found in more or less profusion in all parts of Polynesia, and delights in sandy-mud flats. They vary much in size, shape, development of nodules, and in color vary from white to the most intense saffron-yellow. The sides, though usually more or less yellow, are sometimes pure white. The young are creamy-white, with three narrow, pale, fulvous, transverse bands.

Animal diluted white or creamy-white, the mantle elegantly veined with deep black, and ornamented with numerous simple and dendritic processes which are ringed with opaque-white and tipped with lilac. The tentacles are veined with black. Siphon with a terminal fringe, and the muzzle is light buff-yellow.

35. **C. (Luponia) mappa**, L. Examples of this comparatively rare species were collected at all the groups, except the Marquesas and Sandwich Islands. During an unusually low tide at the Viti Islands, we obtained two living examples on live coral. They inhabit deep water outside the reefs.

Paumotu specimens have a large purple-brown spot on the left side of the aperture.

36. **C. microdon**, Gray. Not uncommon beneath dead coral on the inner margins of reefs; more rare at the Viti and Tonga Islands.
37. **C. (Aricia) obvelata**, Lam. According to our observations this common species is confined to South-Eastern Polynesia. The Society Islands, where they occur in the greatest profusion, may be considered the metropolis or specific centre of the species. M. Crosse, in his 'List of the New Caledonian Cyprææ,' records it from that Island. Not having discovered it in any part of Western Polynesia, I am inclined to believe the New Caledonian specimens were imported from Tahiti. Dr. Gould, in his 'U.S. Expedition Shells,' erroneously quotes it from Samoa. It has also been recorded from Australia and the Sandwich Islands, where it does not occur.

Middle aged shells can scarcely be distinguished from *C. annulus*, except in being a little darker colored. They all show a single faint transverse band.

Like *C. moneta*, they delight in sandy-mud flats. and are frequently found under coral on the inner margins of reefs.

38. **C. (Luponia) poraria**, L. We obtained a few examples of this species at all the groups except the Marquesas. Living specimens were found lurking beneath dead coral on the outer reefs.

Young shells are uniform bluish-violet, with a brown apex.

The animal is vermilion-red, with a greenish-gray mantle, which latter is garnished with small, crowded, tentacular appendages, varied with white and green. Siphon fringed. Upper surface of the foot dotted with greenish-gray.

39. **C. (Luponia) propinqua**, Garr.

After a long hesitation, I have ventured to separate and record this not uncommon shell as distinct from *C. carneola*, with which, as near as I can ascertain, it has hitherto been confounded.

In accordance with the late revision of the genus, they belong to different genera or sections of *Cypræa*, *C. carneola* being a typical form, while the shell under consideration, from its ovate ventricose shape, is a true *Luponia*.

The coloration in every respect resembles *C. carneola*; but they differ much in size, the latter species attaining more than twice the length of our species. They also differ in the number of teeth; *C. carneola* having from 38 to 45 in the outer lip, and we count from 25 to 30 in *C. propinqua*.

It has the form of *C. arenosa*, and the dorsal color and fasciation is quite similar in the two species. The sides, base and teeth are colored the same as *C. carneola*. It is laterally more thickened, and is a more solid shell than the latter. The following measurements are taken from the largest specimen in my possession:—

Length 36, diam. 24, height 19 mill.

Found on the outer reefs at the Paumotu and Society Islands.

40. **C. (*Luponia*) punctata**, L. This small but pretty species is not very abundant. We obtained a few examples at all the groups south of the equator. They were found under dead coral on the outer reefs.

The animal is light orange-red, the mantle deeper colored and profusely sprinkled with white dots; also furnished with pale, dendritic processes. The upper surface of the foot exhibits a few yellowish mottlings. Siphon with a terminal fringe.

41. **C. quadrimaculata**, Gray. Three specimens found on the fringing reefs at the Viti Islands.
42. **C. (*Aricia*) reticulata**, Martyn. Common, beneath masses of dead coral on the outer reefs, and is distributed all through Eastern Polynesia. It also occurs at the Kingsmill Islands.

Adult shells vary considerably in size, and some are decorated with the peculiar letter-like markings which characterise *C. Arabica*. The polygonal maculæ are constant, also the large diffuse spot on the left side of the aperture. Young specimens exhibit four transverse bands.

This species is quite distinct from *C. Arabica*, with which it is sometimes confounded.

The animal has a snuff-brown mantle, which is nearly colorless on the margins, and furnished with small, subulate, tentacular processes of a pale grey color. Upper surface of the foot purple-black, delicately mottled with a lighter shade; creeping disk pale grey. Muzzle and tentacles purple-black, the latter with a basal white spot.

43. *C. rhinoceros*, Souv.? We found several more or less perfect examples on sandy flats at the Viti and Samoa Islands. The specific characters agree very closely with the description and figure of Souverbie's species, which was obtained at New Caledonia.
44. *C. scurra*, Chem. Common at the Paumotus, and somewhat rare at all the other groups. Living specimens occurred under large blocks of dead coral on the outer reefs.

The young shell is marked with four rather faint, light-brown bands on a bluish-grey ground.

Animal olivaceous-brown, with a pale locomotive disk. Mantle with small, rather remote, elongate, conical papillæ. Siphon with a terminal fringe.

45. *C. stolidæ*, L. This fine species seems to be somewhat rare, only occurring to our notice at the Viti and Samoa Islands, where we found several dead but very perfect shells on sandy-mud flats.
46. *C. (Luponia) semiplota*, Mighels. We obtained a few examples of this species at the Sandwich Islands, where it is peculiar.

It is, by some authors, supposed to be a mere variety of *Trivia staphylæa*. Judging from the few specimens before me, I do not hesitate to pronounce it a distinct species. It is perfectly smooth, of a tawny-brown color, profusely dotted with white. The teeth, about 20 on the outer lip, are pale yellowish-white, and margined with hair-like, buff-yellow lines. The canal at either extremity is also buff-yellow. The teeth on the middle portion of the columellar lip are very short, leaving a large smooth space on that portion of the shell.

Trivia staphylæa is studded with raised white dots, and the teeth extend quite across the face of the shell.

47. **C. (Aricia) sulcidentata**, Gray. This rare species seems to be confined to the Sandwich Islands, where we found beach specimens.
48. **C. tabescens**, Sol. This rather scarce cowry was found at all the Eastern Polynesian groups. We obtained living examples on the outer reefs, lurking under stones and concealed among sea-weeds.

Animal vermilion-red, with a pale creeping disk. Siphon dotted with whitish and fringed at the end. The mantle is ornamented with dark red spots, white dots, and studded with dendritic processes.
49. **C. talpa**, L. Common at the Paumotus, but more or less rare at the other groups. It inhabits deep water outside the reefs.
50. **C. testudinaria**, L. This fine large species, which is rarely found, lives in deep water outside the reefs. They occur at all the islands in Western Polynesia, and range east as far as the Society Islands. The animal of this and the preceding species are unknown to me.
51. **C. teres**, Gmel. Also a rare species, and obtained only at the Paumotu and Society Islands, where they were found washed up on the sands.

52. **C. (Aricia) tessellata**, Sowb. This, like *C. sulcidentata*, is quite rare, and is found only at the Sandwich Islands. We obtained beach specimens on the west coast of Hawaii and on the north coast of Kauai. It is generally recorded from New Zealand, but I very much doubt its occurrence there.
53. **C. (Luponia) tigris**, L. This common and well-known cowry occurs in more or less abundance inside the reefs at all the groups.

They are very variable in size and color. The largest examples, which were obtained at Cook's Islands, measured 5 inches in length, whilst the smallest, found at the Carolines, is only $2\frac{3}{8}$ inches in length.

The animal has a creamy-yellow mantle, closely veined longitudinally with deep brown, and marked with a few diffuse spots of the same color. It is also furnished with small, stout, tentacular processes of an amber-yellow color, tipped with white; the processes are either cylindrical or slightly compressed, and simple or bifid. Head, tentacles and siphon grey. The upper surface of the foot is marbled with black, deep brown, and fawn-yellow; creeping disk purple-brown with darker veins.

54. **C. unifasciata**, Mighels. Rather rare; under dead coral on the outer reefs. Obtained only at the Sandwich and Society Islands. The late Mr. Pease considered it a variety of *C. fimbriata*. The two species are certainly very closely allied, and the color of the animals are quite similar.

Having now before me about a dozen perfect specimens of each species, I note the following differences:—Mighels' species is larger, the teeth coarser, less numerous, and the ground color, which is of a more bluish tint, is marked with a more or less broken, transverse, yellowish-brown band. Both species have the terminal pink spots as well as the profusion of small yellow dots.

55. **C. ursellus**, Gmel. Somewhat rare, and inhabits all the groups in Western Polynesia. Station, under dead coral on the inner margins of the outer reefs.
56. **C. (Aricia) ventriculus**, Lam. Obtained a few examples at all the groups except the Marquesas. Young shells show four transverse, reddish-brown bands on a livid ground.
57. **C. (Luponia) vitellus**, L. Found in more or less abundance in all parts of Polynesia, and are usually obtained inside the reefs. The young are marked with four bands, which become nearly or quite obsolete in the adult shell.
58. **C. (Luponia) sp.** This small species was obtained in a dead but perfect condition on the outer beaches at the Kingsmill Islands. We also received it from Swain's Island.

It is shaped like *C. Gaskoinii*. The ground color is slightly darker than in that species, the base less white, the teeth, about 20, are larger and have their external portions dark brown. Sides with similar colored spots. Dorsal region sprinkled with different sized white dots, some of which have deep brown centres. Dorsal line nearly obsolete.

Length 10 mill.

59. **Cypræovula Adamsonii**, Gray. Rather common under clumps of dead coral on the outer reefs at the Society Islands. More rare and smaller at the Paumotus. In the former group they occurred only in a single location on the east coast of Huahine.

All the examples have four irregular-shaped, yellowish-brown dorsal spots, and a similar colored row along the right side.

The animal is yellowish grey, frecked with rich saffron-yellow. The elongate foot is thin, gradually tapering posteriorly to an acutely rounded tip, and slightly auriculate in front. The short siphon is without the terminal fringe.

Tentacles elongate, subulate, annulated with saffron-yellow. The mantle is garnished with large, closely-set, elongate, conical processes, which are granulated and of a saffron-yellow color.

60. **Trivia (Epona) annulata**, Gray. We obtained this elegant species at all the groups, except the Caroline, Sandwich and Marquesas Islands; but rare everywhere, except at the Paumotus and Kingsmills.

Never having found living specimens we suppose they inhabit deep water outside the reefs.

61. **T. Childreni**, Gray. This species has the same extensive range as the preceding, and is much more abundant at the Paumotus than elsewhere. Lives in deep water outside the reefs.

62. **T. (Pustularia) consobrina**, Garr. A rare species, which we have ventured to separate from *T. staphylæa*. It differs from the latter in having the base yellowish-white instead of livid, and the teeth, which are more numerous, are margined with yellowish-brown, hair-like lines. They extend quite across the face of the shell, and are more or less bifid; supplementary ones may be observed between the primary teeth, which more or less anastomose towards the outer margins of the shell. In every other respect the two species are quite similar.

Length 22 mill.

Very rare; found dead but perfect at the Viti and Samoa Islands.

63. **T. corrugata**, Pease. A few more or less perfect specimens found washed up on sandy beaches, at the Paumotu and Society Islands. They are either uniform white or varied with pink.

64. **T. (Epona) cicercula**, L. Found in more or less abund-

ance at all the groups, except the Marquesas. In Eastern Polynesia they seem to live in deep water outside the reefs; but at Samoa and the Viti Islands we obtained a few living examples beneath dead coral on the outer reefs.

They are usually smooth, but some exhibit a more or less granulate surface. A variety occurs in South-west Polynesia, which is smaller, less globose, darker colored and quite destitute of the four basal spots.

65. **T. exigua**, Gray. Rather rare; under dead coral on the outer reefs, and found at all the groups except the Marquesas and Caroline Islands.
66. **T. (Epona) globulus**, L. Excepting the Marquesas, we obtained a few examples at all the groups. It is probably a denizen of deep water outside the reefs. The more or less perfect empty shells are washed up on the reefs and beaches.

South Sea specimens are much smaller, smoother, and lighter colored than East Indian examples. Dillwyn, under the name of *Cypræa margarita*, gives a good description of the Polynesian variety, some of which are perfectly smooth, pure white, and, as he remarks, "strikingly beaked at both ends."

67. **T. insecta**, Mighels. Obtained sparingly, washed up on sandy beaches at all the Eastern groups except the Marquesas. In Western Polynesia it occurred to our notice only at the Caroline Islands.
68. **T. (Pustularia) limacina**, Lam. We obtained fine living examples from beneath blocks of coral on the inner reefs at Samoa and the Viti Islands; also a few beach specimens at the Sandwich Group.

It is, by some authors, quoted as a variety of *T. staphylæa*; but is certainly sufficiently distinct to rank as a separate species. As compared with the latter it is larger, lighter

colored, the base more flattened, the raised dots less numerous and more irregular in shape and size. The teeth are coarser, more yellowish, and do not extend across the face of the shell as in *T. staphylæa*.

Our largest Viti example is 30 mill. in length, which is nearly twice the size of our largest *T. staphylæa*. As near as I can recollect, the animal is of a beautiful vermilion red color.

The above two species, together with *T. consobrina*, are no doubt closely connected by intermediate forms, but I have not sufficient material to trace them through all their variations. *Trivia globulus* and *cicercula* are in the same category; the two species gradually merging into each other.

69. **T. (Epona) margarita**, Sol. Rare; under dead coral on the outer reefs at the Society and Paumotu Islands. It is very abundant at Swain's Island, whence we received several hundred examples.

If Dillwyn has correctly determined and described Solander's *T. margarita*, this most certainly cannot be that shell. As stated in my notes on *T. globulus*, his short description accords exactly with the Polynesian type of the latter species.

The following is a copy of Dillwyn's description:—"Shell half an inch long and two thirds as broad; nearly globular, strikingly beaked at both ends, and white, without any markings. The margin is only slightly thickened, and the spire is distinctly umbilicated, so that it might perhaps be placed with equal propriety next to *C. ursellus*, in the umbilicate division, though Born, Scroeter, and Gmelin have confounded it with *C. globulus*."

The species now under consideration is ovate, the ends slightly produced, right margin thickened and the teeth small. The color is creamy-white, rarely pale fawn, ivory

white beneath, and the ends with a slight brownish-yellow tinge. The dorsal region is profusely maculated with small, not conspicuous white spots of different sizes. It is more like *Luponia* than *Trivia*.

70. **T. (Pustularia) Madagascarensis**, Gmel. Not uncommon at the Sandwich Islands, where we found a number of specimens washed up from deep water.

We have two fine examples now before us, one from Starbuck, the other from Caroline Island, both small islands situated between the Society Group and the Equator. It has never to my knowledge been found in any other part of Polynesia. The name *Madagascarensis* is no doubt a misnomer; its occurrence on the coasts of that island has never been confirmed.

The two above-mentioned specimens are not so much depressed, and are less dilated than Sandwich Island examples; excepting color they very closely resemble *T. nucleus*. They are of a pale tawny-flesh color, with the dorsal riblets and tubercles beautifully margined and ringed with violet lines, and the basal ridges with the usual fawn-yellow lineations.

No doubt a large series of specimens of both species will prove that they gradually merge into each other the same as *globulus* and *cicercula*, and *limacina* and *staphylæa*.

71. **T. (Pustularia) nucleus**, L. Excepting the Marquesas, we found this species not uncommon under dead coral on the outer reefs at all the groups.

As stated in the remark in the preceding species it is very closely allied to *T. Madagascarensis*. It never attains so large a size, is more convex, narrower, the dorsal ribs and granules more crowded, though similarly ornamented with delicate, fawn-yellow lines.

Half-grown specimens are olive-grey or bluish-grey, with raised white papillæ, without the intervening ridges; base and teeth white, the latter shorter than in adults.

72. **T. oryza**, Lam. Has the same range and station as the preceding species. The Polynesian shells, which are not uncommon, are smaller than East Indian examples.

The animal is light snuff-brown, freckled with diluted white and creamy-yellow. The upper surface of the foot is reticulately veined with the latter color. The siphon has a terminal fringe.

73. **T. (Pustularia) staphylæa**, L. This species seems to be somewhat scarce, and has the same range and station as the two preceding.

The few examples before me differ slightly in shape and convexity of the dorsal region. The color varies from livid to brown, and all have the ends tinged with brownish-yellow. The basal ridges are rather large, and extend across the face of the shell.

The animal has a thin, elongate-oblong foot, acutely rounded behind, slightly auriculate in front. Tentacles long and slender, bearing the eyes on small basal enlargements. The short siphon is fringed. Mantle processes large, rather crowded, tentaculiform, with a few dendritic ones intermixed. The creeping disk is pale purple-brown, lighter in front, and delicately veined with a darker shade. Siphon and the upper surface of the foot blackish-brown, the mantle deep brown, which, with the upper surface of the foot, is minutely dotted with white.

74. **T. sphærulea**, Mighels. A few examples gathered in beach-sand at the Society, Paumotu, and Sandwich Islands.

Mr. Pease, in his 'Synonymy of Marine Gasteropoda inhabiting Polynesia,' referred this species to Gray's *T. globosa*, and suggested that it will prove to be a variety of *T. oryza*.

If so, *T. insecta* will undoubtedly share the same fate, as they all three seem to be connected by intermediate forms. Examples of *T. corrugata* now before me vary as much in shape as the above three species.

75. *Trivia* sp. We found three examples of this species under coral on the outer reef on the east coast of Huahine, Society Islands.

It is shaped like *T. exigua*, with a distinct dorsal groove, hyaline-white, and the ribs are more compressed than in *T. oryza*. The ends are more produced than in the latter species.

The animal, which we have only imperfectly examined, is diluted white, the mantle with a wide marginal band, consisting of microscopical light-red dots.

The following species, not found by the writer, are recorded from the South Sea Islands.

Cypræa (Luponia) polita, Roberts. Sandwich Islands. Mr. Roberts' description and figure accords so nearly with the shell which we have referred to *C. semiplota*, that I am inclined to believe they are identical. He describes the teeth as being a little darker than the ground color, whilst in our shells they are pale fulvous, edged with darker lines.

C. (Luponia) Annæ, Roberts. Sandwich Islands.

C. (Luponia) spadix, Mighels. Sandwich Islands. Mr. Pease considered this species, together with *C. semiplota*, to be varieties of *Trivia staphylæa*.

C. (Luponia) Humphreysii, Gray. Viti Islands. Dr. Gould, in the 'United States Exploring Expedition Shells,' remarks that this species was found in the above group.

C. (*Luponia*) *spurca*, L. Upolu, Samoa Islands. So recorded in 'Museum Godeffroy Catalog, iv.' Probably an error in identification, or the species was imported in the above group. Dr. Gräffe, who is supposed to have collected the specimens, received to my knowledge some West Indian shells from an officer of an English man-of-war which touched at Upolu, at the time that I was residing there. The above species may have been obtained through the same source.

***Trivia pellucidula*, Gaskoin.** South Pacific. This may possibly be identical with our species No. 75.

T. (*Pustularia*) *granulata*, Pease. Central Pacific. This is undoubtedly one of the intermediate forms which connect *Madagascarensis* with *nucleus*, as mentioned in my remarks on these species.

Judging from his description, his specimens may not have been quite full-grown. I cannot understand how he could have "examined living specimens from various parts of the Pacific," especially as his explorations never extended outside the Sandwich Islands. He probably referred to *perfect* instead of living specimens.



HELIX FUSCA (MONTAGU) NEAR REDCAR.

By C. ASHFORD.

Though not a rare shell, *Helix fusca* is still sufficiently local to merit record as occurring in Wilton Wood, its favorite resort being the leaves of the woodrush.



NOTES ON THE HABITS AND DISTRIBUTION, &c.,
OF CERTAIN W. INDIAN *PULMONIFERA*.

By J. S. GIBBONS, M.B.

Having lately visited most of the principal ports of the West Indies, I have put together the following notes on the more remarkable species collected, in the hope that, although containing no new facts of scientific value, they may prove of interest as the results of personal observation in the native haunts of the molluscs.

Glandina solidula, Pfr. Habana and Puerto Plata (San Domingo).

Hyalina decolorata, Drüet. Georgetown (Demerara). Animal a beautiful clear lemon-color; eggs large, oval, much more compressed than those of *Stenogyra*, with a hard, greenish, and almost transparent shell.

Guppya vacans, Guppy. Trinidad and Georgetown. Although young are not rare, I never succeeded in finding the shell considered by Mr. Guppy to be the adult form. A nearly allied species occurs at Puerto Cabello and Tobago.

Helix subaquila, Sh. Puerto Plata and St. Thomas.

H. vortex, Pfr. Habana and St. Thomas. The Cuban molluscs have the tentacles dark neutral or black; those collected at St. Thomas have the same organs reddish. I am, however, unable to detect any difference in the shells. Animal ovoviviparous. The shell is usually incrustated with dirt, as in some other species of *Microphysa*.

H. paludosa, Pfr. Habana. One specimen is an albino variety.

H. Cubensis, Pfr. Habana. On acacias. The banded variety is of less frequent occurrence than the pure white.

Bulimus distortus, Brug. Puerto Cabello (Venezuela). Eggs oval, white, calcareous; 5 lines in length.

Orthalicus undatus, Brug. Spanish Main, from Puerto Cabello to Cartagena; Vera Cruz; also Trinidad and Grenada. Specimens collected on the mainland are considerably larger than those from the islands. Puerto Cabello specimens have an unusually thick epidermis.

Bulimulus sepulchralis, Poey. Habana. Many are hardly distinguishable from specimens of *B. tenuissimus*, Fér., collected at Trinidad.

B. exilis, Gm. St. Thomas, St. Lucia, and Barbadoes. Specimens from the last island are invariably much broader and more obese than the St. Thomas' shells, while the St. Lucia examples form a still more marked variety, being very slender and altogether smaller than the others.

B. Knorri, Pfr. Puerto Cabello. On cacti only. A white variety with orange colored apex and peristome is nearly as common as the type.

Streptaxis deformis, Fér. Georgetown, Puerto Cabello, Sabanilla, Cartagena, and Trinidad. Specimens from the three last localities are barely half the size of the others.

Ennea bicolor, Hutton. St. Thomas and St. Lucia. This species would appear to be spreading; it is improbable that it was introduced at more than one point originally, viz., Trinidad. Specimens I have from Mauritius differ merely in being a little shorter and more solid.

Cionella lamellata, M. & R. St. Lucia, Grenada, Tobago, and Trinidad. At Puerto Cabello a closely allied species occurs (*C. Funcki*, Pfr.), differing from *C. lamellata* in being narrower and less tumid, more strongly striated, less transparent, and with the columellar lamina more prominent. The animal in both species is ovoviviparous, containing 6-8 young.

Spiraxis simplex, Guppy. Trinidad. Eggs large, calcareous, white, like those of *Stenogyra*.

S. Dunkeri, Pfr. Puerto Plata. Ovoviviparous. I tried in vain to tempt this animal with pieces of meat; a *Glandina solidula* placed in the same tumbler greedily ate up the meat.

Stenogyra micra, D'Orb. Puerto Plata, Barbadoes and smaller Islands to Trinidad, Spanish Main. Animal carries the shell semi-erect, instead of dragging it along as do other species of *Stenogyra*; the eggs, too, are different in shape, are proportionately smaller and nearly transparent. Puerto Cabello specimens are very strongly lamellate.

S. octona, Ch. Habana to St. Thomas, thence down Lesser Antilles and all along the Spanish Main. Another species, *S. octonoides*, D'Orb, has a similar distribution. I did not find either at Vera Cruz. *S. octona* is by far the most common West Indian land shell, it varies considerably according to locality. The animal contains eggs all the year round, in fact it seems never without them; in some instances, if not always, the young are hatched in the animal.

Cylindrella Trinitaria, Pfr. Trinidad and Sabanilla (New Grenada). Common in several places about Port-au-Spain; it is rarely decollated. I found specimens of a well marked variety much more solid than the type, nearly twice the breadth, and more spindle-shaped. At Sabanilla a slight variety is abundant, intermediate between the last and typical shells, the ribs, moreover, are lighter in color, making the shell unusually handsome.

Pupa fallax, Say (= *P. Parraiana*, D'Orb.) Habana, Puerto Plata, Spanish Main. Cuban specimens differ more from Cartagena shells than from the North American type. Examples found at Curaçao and Cartagena are broader, thicker, and darker in color than those from Puerto Cabello and the islands.

P. pellucida, Pfr. Habana, Barbadoes, and Spanish Main.

Omalonyx felina, Guppy. Georgetown. This is a most interesting mollusc. It lives among plants at the very edge of the water, but is quickly drowned if placed in the latter, and death is almost equally rapid when taken away from water. In Mr. Guppy's list (*Q. J. C.*, p. 109), it is mentioned as peculiar to Trinidad.

Succinea Barbadosensis, Guild. Barbadoes. Unlike most members of the genus, this will bear considerable deprivation of moisture; during the dry season, the animal ascends the trunks of trees, attaches the mouth of the shell firmly to the bark and then retires as far within the shell as possible. A Vera Cruz species (? *S. aurea*, Lea) is equally able to withstand drought.

S. approximans, Shut. St. Lucia, Grenada, and Tobago. A broader and more globose species.

Vaginulus Sloanii, Fér. Habana. Eggs are subglobose, $\frac{3}{8}$ -in. or more in length, pellucid, with a membranous capsule; they adhere to each other, forming a hemispherical mass 1 to $1\frac{1}{2}$ inch in diameter; a distinct rounded band of firm and elastic mucus encircles the upper border, preserving the shape of the mass. Eggs deposited in June.

Melampus coffeus, L. Habana, Puerto Plata and St. Thomas, Demerara and Spanish Main. Cuban differ from Demeraran shells in being less sharply angulate, in spire being more raised, sides less flattened, and color lighter (? var. *Gundlachi*, Pfr.)

Limnæa Cubensis, Pfr. Habana, in a roadside rill. *L. umbilicata*, Ads., is a synonym according to Poey. Adams mentions occurrence of latter in Jamaica, Cuba, and Massachusetts (*Contr. to Conch. i.*, 50). Binney assigns *L. umbilicata* to *L. caperata*. My Habana shells are quite distinct from *L. caperata* and have but a remote resemblance

to Adams' description and figure of *L. umbilicata*; on the other hand they correspond exactly with the typical figure of *L. humilis*, Say (N. Amer. L. and F. W. Shells, fig. 99, p. 63), and with the description, except that they have 5 instead of "nearly 6 whorls." I have specimens of *L. humilis* from several localities in the United States, but apparently none perfectly typical—at least they do not agree with the figure quoted above, and consequently differ from the Cuban mollusc. I see no difficulty in considering *L. Cubensis* a variety of *L. truncatula*, Müll., of which Jeffreys says *L. humilis* is a synonym and *L. umbilicata* an allied species (Ann. and Mag. N. H., 1872, p. 246).

Physa Sowerbyana? D'Orb. (=? *P. ventricosa*, Guild.) Vera Cruz, Habana, and St. Thomas. The Mexican shells are a trifle smaller and lighter in color than those from St. Thomas.

Planorbis Havanensis, Pfr. Georgetown. In Mr. Guppy's list of Trinidad shells, this is mentioned (under the name of *P. Terverianus*, D'Orb.) as occurring in that island and the Antilles only.

Planorbis tumidus, Pfr. Jamaica and Vera Cruz. The shells agree with description and figure of the above in L. & F. W. Shells N. Amer., ii., p. 105. C. B. Adams described the Jamaica shells under the name of *Planorbis affinis*.

Megalomastoma Antillarum, Sow. St. Thomas. This species resembles *Cyclophorus Wahlbergi*, Bens., a Natal shell, in habits, preferring to hide itself among damp mould, under dead leaves, in the darkest parts of woods. In both species the epidermis is usually very thick, and readily peels off when dry. Shells are however sometimes to be found where the ground is somewhat bare and stony; the epidermis is then much thinner, smoother, and lighter in color.

Chondropoma plicatulum, Pfr. Puerto Cabello. The animal suspends itself by a very thin but strong silk-like filament, $\frac{1}{3}$ to $\frac{1}{2}$ -in. long, issuing from between the operculum and the outer lip, two-thirds of the latter's length from the suture. This mode of suspension (which is similar in *Tudora megacheila*, P. & M.) is wholly different from that of the South African *Cyclostomas*; the latter attach their shells to branches by means of a pellicle of dried mucus, very brittle and proceeding from the edge of the columellar lip.*

During almost every month of the year I have collected specimens of various species of *Chondropoma*, and have invariably found that shells with fully formed apertures bear but a small proportion to those having it immature. This is not the case with *Tudora* and *Choanopoma*, in which genera it is rare to find a specimen with an imperfect mouth.

Helicina lirata, Ducl. Puerto Cabello and Vera Cruz.

H. substriata, Gray. Barbadoes. Lives on trees. A very pretty species and variable, specimens being frequently chrome-yellow, bluish, or dark red.

H. subfusca, Mke. St. Thomas. A variety in form occurs, broader and more flattened. In color some are dark rich reddish, others pale transparent greenish.

January 31, 1878.

* Since writing the above, Mr. Tye's exhaustive paper on Molluscan Threads has appeared in this journal (i., p. 401). Mr. Tye makes a slight error in giving *Cerithidea decollata*, L., as an instance of a mollusc suspending itself by threads. Woodward's figure at p. 209, Man. Mollusca, is *C. obtusa*, Lam. I have seen *C. decollata* at Natal covering the trunks of marsh trees to such an extent that not an inch was unoccupied, but they were attached by a trifle of brittle mucus passing from the lip to the tree in the same manner as in brackish-water *Littorina*, and doubtless produced in the mode described by Mr. Tye as being adopted by *Helices*.

The suspensory thread of *C. plicatulum* is clearly a very different affair. Its shape, length and flexibility, combined with the fact that it issues from between the lip and the operculum, indicate a totally distinct method of manufacture.



NOTES ON SOME OF THE LAND SHELLS OF
CURAÇAO, W.I.;
WITH DESCRIPTIONS OF TWO NEW SPECIES.

By J. S. GIBBONS, M.B.

Cionella Gloynii, sp. nov. (Pl. I, fig. 1).

Testa anguste subcylindrica, elongata, tenuis, subdiaphana, luteo-cornea, striata; anfr. 9-10, planulati, quatuor superiores crescentes, ultimus maximus, alii æquales: sutura angusta, distincta; apertura ovata, superne angusta, angulata, basi rotundata: labium externum tenue rotundatum: columella lente callosa, arcuata, truncata, cum lamina tenui post medium.

Long. 13 mill., diam. 3 mill.

Shell subcylindrical, elongate, narrow, rather thin, semitransparent, dull yellowish-horn color, closely and rather coarsely striate by lines of growth; epidermis thin and distinct; whorls 9-10, flattened, the first 4 gradually increasing—the body-whorl rather the longest, the middle turns equal in size; spire shortly pointed; suture narrow, well marked; aperture ovate, rounded in front, narrow and angulate behind, outer lip thin and direct, gently curved, columella somewhat callous, arched with a sharper curve, ending abruptly a little behind anterior end of aperture; a thin lamina winds spirally down axis of shell, appearing in the aperture as a low thin tooth, situated rather behind the middle of the columella.

Animal pale grey, tentacles darker grey.

St. Ann's. Under stones; numerous.

Succinea gyrata, sp. nov.

Testa oblongo-ovata, pertenuis, pellucida, nitide-striata, cornea (?);
anfr. 4, angusti, convexi; spira elongata; apex acutus; sutura
perobliqua, profunda; apertura obliqua, elongato-ovata; colu-
mella arcuata, leviter callosa.

Long. 12 mill., diam. 6½ mill.; apert. long. 7 mill., diam. 4½ mill.

Shell oblongo-ovate, very thin, pellucid, distinctly and somewhat irregularly striate by lines of growth, shining, horn color; whorls 4, convex, narrow, spire elongate, twisted, apex acute; suture very oblique, deep and broad; mouth elongato-ovate, oblique; pillar lip sharply curved, slightly callous.

St. Ann's, under stones. A very distinct form having an unusually elongated spire with a very deep suture.

The above described species was obtained during a hasty visit paid to St. Ann's in the autumn of 1877. At the same time I obtained the following:—*Stenogyra octonoides* and *Pupa fallax*, both of wide range in the W. Indies, *Cylindrella Raveni* and *Cistula Raveni*, peculiar to the island, and four others that require more detailed notice.

Bulimulus multilineatus, Say. I found the so-called type (agreeing exactly with the top figure on plate 58, W. G. Binney's 'Terr. Moll.,' vol. v.) at Santa Martha; at St. Ann's a variety occurred (? var. *Sisalensis*) differing in little but the absence of the sutural band. A similar variety was found at Savanilla and Carthagena, in each instance unaccompanied by type.

Strophia uva, L. Two forms, one hardly more than half the length of the other. I found a half-grown specimen (dead) near the beach at Santa Martha, most probably brought from Curaçao. In Woodward's Manual, p. 531, Guadalupe is erroneously given as the home of this species—the mistake is repeated in Paetel's Catalogue.

Macroceramus inermis, Gundl. Appears to be the same

as the Cuban shell; its occurrence here is very curious, but so also is the presence of a *Strophia*—altogether the molluscan fauna of Curaçao is by no means of the character one might expect from its geographical situation.

Tudora megacheila, P. & M. There is great variety in this species. The majority of the shells are strongly and regularly ridged spirally, but others are smooth (var. ♂ Pfr.); in size many are barely half that of the rest; the color varies from pure white to yellowish, but is often pink, brown, blue or bluish-purple. The operculum differs greatly from that of the Jamaican *Tudora*, approaching that of *Cyclostomus*.

April, 1879.



DISCOVERY OF *GUNDLACHIA* IN TASMANIA.

By W. F. PETTERD.

Gundlachia Petterdi, Johnston ; Pro. Royal Soc. Tasmania.

On returning from a short collecting excursion to the Cataract near Launceston, I was greatly surprised to find among my spoils a remarkable looking shell. On bringing the lens to bear upon it I at once saw it was something quite new for Tasmania, and at first I thought it a malformed specimen of an *Ancylus*, but closer examination proved it to be a species of *Gundlachia*, a genus hitherto unknown either in Tasmania or Australia, at least so far as I am aware. In fact I am under the impression that *G. ancyliformis* from Cuba is the only known species; if such is the case this is indeed an interesting discovery. It is found on the stems of water plants and decaying leaves in a small swamp near Launceston. It has been described in a paper to the Royal Soc. Tas. by my friend Mr. Johnston.



DESCRIPTIONS OF TWO NEW SPECIES OF LAND
SHELLS, AND REMARKS ON OTHERS COLLECTED
ON THE EAST AFRICAN COAST.

By J. S. GIBBONS, M.B.

In the first volume of this journal eleven species of land and fresh water molluscs, collected at Zanzibar and Mozambique, were described as new by the editor.* I now add two more species previously overlooked, and take advantage of this opportunity to make a few remarks on other species already recorded from East Africa, but about which further information may be useful. I may mention that I paid but little attention to the land shells when out there, otherwise there is no doubt a much larger number of species would have been obtained. The intense heat makes shell-collecting inland very unpleasant, and one naturally prefers the water, where the air is cooler and shells obtained more readily and in greater numbers.

***Urocyclus flavescens*, Keferstein.**

Parmarion flavescens, Keferst. Malak. Blatt., 1866, p. 70
(fide W. G. Binney, MS.)

Body slender, tapering, keeled, tail sharply pointed—on each side of dorsum a slight and rounded ridge runs from shield to tail; surface longitudinally sulcate, color dark orange, keel and lateral ridges light lemon, the sulci and their anastomosing branches dusky; head and neck semipellucid, latter slender; shield anterior, elongate, very convex from side to side, thin and rounded in front, bluntly rostrate behind, a large swelling of the posterior part indicates the situation of the shell, the apex of which is sometimes visible

* Q.J.C., i., pp. 251, 280, 379.

through a small longitudinal slit situated on a slight eminence nearly at the end of the pointed posterior part of the shield; surface rich orange, thickly studded with small oval granules of a rich lemon color; respiratory orifice large, three-fifths length of shield from anterior end; tentacles long and slender, semitransparent, dusky-orange color and with head, very beautifully granulate, granules being small, regular and of a pearly appearance; a slight furrow runs round body about 2 mills. above margin of foot; below this the surface is uncovered by the usual integument, greyish, smooth and secreting mucus very abundantly, at the tail this margin is 6 mill. in extent and bears a small, oval and longitudinal mucus pore, above which the integument forms a slight peak.

Length 3 in.; when at rest, about $1\frac{1}{4}$ in.

Shell calcareous, unguiform, ovato-oblong, very thin and fragile, above a little convex from side to side, below shallowly concave, sides nearly parallel, anterior edge a little attenuated; behind, the shell is squarish and bears a thickened prominent apex, which overhangs the margin and is turned very slightly to the right; color a very pale yellowish, apex nearly white; sculpture consists of faint semicircular wrinkles, absent from apex; lower surface of shell covered with a very thin membrane, which is produced beyond the edge and forms a short border.

Length $7\frac{1}{2}$ mill., breadth 5 mill.

Var. pallida. Shield and body opaque white color, with a faint yellowish tinge.

Occurs on bushes at Mozambique in considerable abundance; the rich orange color of the mollusc contrasting very beautifully with the dark green foliage to which it clings. The variety is found with the type and is also somewhat common.

U. Kirkii, Gray,* the species on which the genus is founded, seems to be quite distinct. A nearly allied species occurs at

* *Pro. Zool. Soc.*, 1864, p. 250.

Delagoa Bay and Port Natal, distinguished by its larger size, paler color, and coarser granulations on shield.

The slit in the shield is capable of considerable enlargement; sometimes a good deal of the spire is visible, usually the orifice is so contracted that none of the shell can be seen. I once saw milky mucus exude from the slit.

A comparison of this mollusc with the animal of any of the S. E. African *Nanina* shews some interesting points of resemblance; in both there is a furrow running from head to above mucus pore, below which the surface is smooth and mucus-secreting; the pore is common to both, and the caudal spine of *Nanina* is indicated in *Urocyclus* by the peaked termination of the integument behind; lastly, if we suppose the orifice in the shield of *Urocyclus* to be greatly enlarged, and the rudimentary shell developed, we shall have an arrangement of the shield similar to the collar of *Nanina*-viz., part investing the peristome of shell and part covering dorsum of body. *Hyalimax* is probably related to *Urocyclus*, but judging from description* the closest ally is *Hemphillia*, in fact they appear to agree in external generic characters, except that the latter has the shell more exposed, or, in other words, the slit in the mantle larger.

***Limax*, sp. indet.**

A small brown *Limax* is of somewhat rare occurrence at Zanzibar.

***Onchidium*, sp. indet.**

I found specimens of the above on moss in ravines; Bawri Island, Zanzibar Channel.

***Vaginulus Natalensis*, V. Rapp.? var.**

Krauss, Südafr. Moll., p. 72.

Body oblongo-elliptical, depressed, keeled longitudinally, sides sloping from keel to margin and hardly convex, ends rounded,

* Terr. Air-Breathing Molluscs, N. Am., v., p. 246.

margin thin and plain; color jet black, with a line of irregular dusky white spots along keel; tentacles 4, upper pair short, thick and cylindrical, of a dark neutral color, lower pair shorter and thicker, distinctly bifid at extremity, light greyish; foot one-third breadth of body, moderately high; upper surface of body minutely granulate, glossy.

Length about 2 in.

Young are not keeled and are of a light umber color, thickly speckled and mottled with rich brown.

Occurs on the ground under stones, &c., at Mozambique. I have compared this mollusc with living specimens of *V. Natalensis* collected at Delagoa Bay and Port Natal, and I think it is merely a variety, the only important differences being the size and color.

Ennea Taylori, sp. nov.

Testa elongata, anguste rimata, tenuis, subdiaphana, indistincte costata; epidermis pertenuis, polita; anfractus 8, planiusculi, gradatim accrescentes, suturâ valde plicatâ sejuncti; anfr. ultimus penultimo vix major; apex obtusiusculus; apertura parva, ovato-quadrata, L. et D. equales (.8 mill.), antea late rotundata; peristoma incrassata, leviter reflexa, labio externo in mediâ parte noduloso; columella alba, superne expansa; paries aperture confuse uniplicatus.

Long. 5 mill., diam. 1.3 mill.

Shell narrowly rimate, elongate, slender, thin and subdiaphanous, costate obscurely on whorls, very prominently across the impressed suture; epidermis very thin, polished; whorls 8, rather flattened, gradually increasing, the last but little larger than the penult.; apex somewhat obtuse; aperture squarish, a little ovate, broadly rounded in front; length and breadth equal; peristome incomplete, thickened and everted, forming a sharp margin externally;

outer lip nearly parallel with columella, a trifle inflexed behind, thickened internally about the middle; columella flattened, white; on wall of the aperture a slight callous tubercle arises near but not from the inflexed termination of the outer lip.

Zanzibar. One specimen dead under a bush.

Allied to *Ennea bicolor*, Hutton, of the Mauritius.

I have the pleasure of naming this species after the Editor of the *Journal of Conchology*.

Nanina Mozambicensis, Pfr.

Mozambique and Zanzibar. Speke and Grant collected it at Uzaramo and the Victoria Nyanza,* and V. der Decker in the Seychelles (var. *albo-picta*). At Mozambique it occurs on the Mainland on the stalks of a species of *Carex*; on the Island of Mozambique it is now extinct. The dead shells shew it to have been a variety larger and more solid than the type, and with a more elevated spire. At Zanzibar it is to be found on the coral islet Chapani, on grass, the baobab tree, &c.; all the specimens I noticed belong to a very distinct variety—smaller, thinner and more fragile than the type, of a pure milky-white color, and always with a narrow band of brownish above the periphery; the whorls also are more rounded and umbilicus almost obsolete. The specimens from the interior appear to be larger than those of the coast.

The animal has the body narrow, dorsum high, faintly granulose longitudinally; sides concave; behind shell it is rather broader, with an obtusely rounded tail bearing a triangular sinus, surmounted by a thick and rather short, rounded spine; color is a light yellowish, sometimes tinged with brown, darker on the head, dorsum and tentacles, the latter being tipped with dark brown, a streak of which runs down the ocular pair and along either side of dorsum to shell; caudal spine is also dark brown.

* Proc. Zool. Soc., Mar. 8, 1864.

Both in shell and animal *N. Mozambicensis* approaches *N. cotyledonis*, Bens., of the Cape of Good Hope.

***Achatina fulica*, Fér.**

Zanzibar. Very numerous and generally diffused, being the only land shell that is so; it lives on hedges, bushes, trees, &c. It has been introduced into Mauritius and Calcutta, and is recorded from the Seychelles and Madagascar.

***Achatina Rodatzi*, Dunker.**

Zanzibar. Occurs sparingly with the last, to which it is very closely allied.

***Achatina allisa*, Reeve?**

Zanzibar. One dead and very ancient specimen in a cave on a small islet between Bawri Island and Chapani.

***Achatina reticulata*, Pfr.**

Lindi Bay, North of Cape Delgado. Dead only; the largest was 8 in. in length.

***Achatina panthera*, Pfr.**

Mozambique and Inhambane. It is common on the Island of Mozambique, living on trees and in cavities of rocks shaded by bush; on the Mainland individuals are much larger and more solid. During the dryseason it takes refuge in holes in trees—I have seen a dozen or more collected in one cavity—the aperture of the shell is then closed by an opaque epiphragm (non-calcareous) having a longitudinal slit down the middle. The eggs of this, as in all the S. and E. African species, are small and numerous; one individual deposited its eggs while in my possession—I counted 196—they were oval, yellow, with a thin calcareous shell, length 6 mill. The animal is omnivorous, eating meat, other snails (when dead), vegetables and paper.

***Achatina immaculata*, Lam.**

I have obtained this Delagoa Bay species from Inhambane. Unlike the more northern species, it seems to live always on the ground.

Buliminus Mozambicensis, Pfr.

Numerous on low shrubs and grass; Island of Mozambique. At Zanzibar a variety occurs, rare and local. Eggs are ovato-globular, white, with thin calcareous shell, length rather more than 1 mill.

Buliminus punctatus, Anton.

Mozambique and Zanzibar. On shrubs and grass. My specimens are more calcareous and paler than Ceylon shells, and less tumid than the Brit. Mus. examples from Bundelkund, C. India. On Chapani Island a variety occurs associated with *Nanina Mozambicensis*, &c.; it is nearer the Indian form.

Stenogyra lucida, sp. nov.

Testa gracilis, diaphana, sublevis, nitida; anfr. 7, planiusculi, gradatim accrescentes; ult. major et tumidior; apex obtusiusculus; apertura ovato-elliptica; labr. arcuatum; collumella parum reflexa.

Long. 5½ mill., diam. 2 mill.

Allied to *S. delicata*, but perfectly distinct, being much smaller, with the whorls flatter and nearly smooth, and the aperture less elongated.

Occurs on Bawri Island, Zanzibar.

I may here call attention to a peculiarity in the distribution of the land shells among the coral islets near Zanzibar. My researches were too limited to allow me to state authoritatively that certain species are confined to one island and not found elsewhere, but the results are sufficiently curious to deserve notice. There are several of these islets, but I only examined two of them at all thoroughly. Bawri is the largest and is situated about 3 miles from Zanzibar; it possesses cocoa-nut palms and orange trees, but the greater part is covered with jungle. The comparatively recent formation of this, as of the other islets, is shewn by the successive layers above the present high water

mark of subfossil shells which belong to species still living in the surrounding seas. I obtained 5 land shells from Bawri; 3 species of *Buliminus*, all peculiar, but two having nearly allied species at Zanzibar; *S. lucida*, also peculiar, and a *Pupa*, which is the only species I found common to Zanzibar. Chapani Island is nearer Zanzibar and boasts of a small Baobab tree; here I obtained *Nanina Mozambicensis*, var., *B. punctatus*, var., and the following common to Zanzibar:—*B. Mozambicensis*, var., *B. tumidus* and *Cyclostomus Zanguebaricus*. A third islet, visited once, yielded *A. allisa* only.

***Cyclostomus Zanguebaricus*, Petit.**

Mozambique and Zanzibar. At the former place it is common on the trunks of trees, old walls, &c. At Zanzibar it is scarce and local, and the shells are rather different, being larger and more tumid, with a less distinct suture. Variation in color and markings is sometimes considerable—specimens may be seen almost pure white and without bands, others a deep golden color. *C. Zanguebaricus* appears to be a favorite food of birds. Large numbers of empty shells may often be seen round a stone, with the last whorl broken open a short distance from the aperture.

***Cyclostomus Kraussianus*, Pfr.**

I found this Natal species at Inhambane.

***Cyclostomus calcareus*, Sow.**

Mozambique. Livingstone and Kirk found it up the Zambesi, and on Lake Nyassa.* “Between 4° S. and 4° N. lat.; locality doubtful,” by Captain Speke†. On the Island of Mozambique it is now extinct and specimens are only to be obtained in a sub-fossil condition from a sandy formation at one end of the island. There shells are very numerous, but I failed to obtain an operculum.

* Proc. Zool. Soc., Feb. 28, 1865. † Ibid, 1864.

BIBLIOGRAPHY.

1872.

Conrad (T. A.)—Descriptions and illustrations of genera of Shells [Fossils.]—Proc. Acad. Nat. Sci. Philad. 1872, pp. 50 to 55 and 2 plates.

Treats of the fossil genera *Crassatella*, *Pleuroconcha*, *Plionema*, *Scambula*, *Pteromeris*, *Vetericardia*, *Pleuromeris*, *Euloxa*, *Alveinus*, *Parastarte*, *Latiarca*, *Idonearca*, and *Trigonoarca*.

Tryon (George W., junr.)—Catalogue and Synonymy of the Recent Species of the Family Lucinidæ.—Proc. Acad. Nat. Sci. Philad. July 16, 1872, pp. 82 to 96.

The author enumerates 57 species of *Lucina*, Brug., (subgenera *Here*, Gabb, *Woodia*, Desh., *Cyclas*, Klein., *Codakia*, Scop., *Miltha*, H. & A. Ad.); 16 of *Myrtea*, Turton, 1 of *Philis*, Fischer, 22 of *Loripes*, Poli, 16 of *Cryptodon*, Turton, 5 of *Gafrarium*, Bolten, 2 of *Ungulina*, Daudin, 2 of *Scacchia*, Philippi, 49 of *Mysia*, Leach (subgenus *Felania*, Recluz, included) and 3 species of unidentified *Lucinida*.

Lewis (James, M. D.)—Shells of Herkimer and adjacent counties in the State of New York.—Proc. Acad. Nat. Sci. Philad. 1872 (pub. July 16) pp. 97 to 107.

One hundred and five species of land and freshwater shells are enumerated.

Lewis (James, M. D.)—Shells of Tennessee (No. 2).—Proc. Acad. Nat. Sci. Philad. 1872 (pub. July 16) pp. 108 to 115.

Supplementary to a former list (Amer. Jour. Conch.) Fifty-seven species are given. The ranges of many are indicated by numbers referring to a table of localities.

Tryon (George W., junr.)—**Catalogue of the Family Chamidæ.**—Proc. Acad. Nat. Sci. Philad. 1872, pp. 116 to 120.

One genus (*Chama*) of 56 species. The subgenus *Arcinella*, Schumacher, is not allowed to have systematic value.

Tryon (George W., junr.)—**Catalogue of the Family Chametrachæidæ.**—Proc. Acad. Nat. Sci. Philad. 1872, pp. 120 and 121.

Six species; two genera, *Chametrachæa*, Klein., and *Hippopus*, Meuschen.

Tryon (George W., jun.)—**Descriptions of new species of marine bivalve mollusca.**—Proc. Acad. Nat. Sci. Philad. 1872, p. 130 and plate vi., figs. 1, 2, 3.

The new species are *Crassatella Adelinæ*, Hab. unkn.; *Lucina* (*Codaria*) *distinguenda*, Gulf of California; and *Circe* (*Crista*) *bidivariata*, Red Sea.

Bland (Thomas) and **Binney** (W. G.).—**Notes on Lingual Dentition of certain species of North American Land Shells.**—Proc. Acad. Nat. Sci. Philad. 1872, pp. 135 to 137.

Five *Zonites*, 4 *Patula*, 5 *Helix*, 1 *Pallifera* have their lingual membranes noticed.

Cooper (J. G., M.D.)—**On New Californian Pulmonata, etc.**—Proc. Acad. Nat. Sci. Philad. 1872, pp. 143 to 154, and plate iii.

The new species are *Alexia setifer*, *Limax* (*Amalia*) *Hewstoni*, *L. (Eulimax) campestris*, Binney, var. *occidentalis*, *Ariolimax Californicus*, *A. niger*, *Arion*? *Andersonii*, *Lysinoe diabloensis*, *Assimineæ Californica*, and *Cæcum Smithii* (= *C. Cooperi*, Smith).

Lea (Isaac).—**Descriptions of 20 species of Unionidæ from the United States.**—Proc. Ac. Nat. Sci. Philad. 1872, pp. 155 to 163.

Conrad (T. A.)—Descriptions of a New Recent Species of Glycimeris, from Beaufort, North Carolina, and of Miocene Shells of North Carolina.—Proc. Acad. Nat. Sci. Philad. 1872, pp. 216 and 217, and plate vii.

G. bitruncata, *Donax idoneus*, *Ostranomia Carolinensis*.

Tryon (Geo. W., junr.)—Catalogue and Synonymy of the Family Galeommidæ.—Proc. Acad. Nat. Sci. Philad. 1872, pp. 222 to 226.

Twelve species of *Galeomma*, Turt.; 1 *Libratula*, Pease; 1 *Thyreopsis*, H. Ad., and 53 *Scintilla*, Desh.

Tryon (Geo. W., junr.)—Catalogue and Synonymy of the Family Leptonidæ.—Proc. Acad. Nat. Sci. Philad. 1872, pp. 227 to 229.

Nineteen species of *Lepton*, Turton, and 7 *Tellimya*, Brown.

Tryon (Geo. W., junr.)—Catalogue and Synonymy of the Family Laseidæ.—Proc. Acad. Nat. Sci. Philad. 1872, pp. 229 to 234.

Nine species of *Lasea*, Leach; 1 *Thecodonta*, A. Ad.; 34 *Kellia*, Turton; 1 *Cycladella*, Carp.; 13 *Pythina*, Hinds; 12 *Montacuta*, Turton, and 2 *Cyamium*, Phil.

Tryon (Geo. W., junr.)—Catalogue and Synonymy of the Family Astartidæ.—Proc. Acad. Nat. Sci. Philad. 1872, pp. 245 to 258.

Eighteen species of *Astarte*, J. Sow. (and its subgenera *Gonilia*, Stoliczka, and *Goodallia*, Turton), 12 of *Gouldia*, C. B. Ad.; 1 of *Miodon*, Carp.; 38 of *Crassatella*, Lam.; 49 of *Actinobolus*, Klein; 3 of *Cyclocardia*, Conrad; 1 of *Pleuromeris*, Conrad; 24 of *Mytilicardia*, Blainv., and 6 of *Carditamera*, Conrad.

Tryon (Geo. W., junr.)—Catalogue of the Family Solemyidæ.—Proc. Acad. Nat. Sci. Philad. 1872, p. 258.

One genus, *Solemya*, H. & A. Ad., of six species.

Gabb (Wm. M.)—Notes on the Genus Polorthrus, Gabb.
—Proc. Acad. Nat. Sci. Philad. 1872, pp. 259 to 262 & pl. viii.

Gabb (Wm. M.)—Notice of a Collection of Cretaceous Fossils from Chihuahua, Mexico.—Proc. Acad. Nat. Sci. Philad. 1872, pp. 263 to 265, and plates 9, 10, 11.

Thirteen species named. Two are described and figured—*Ammonites Guadalupe*, Roem., and *Lima Kimballi*, Gabb, nov. sp.

Gabb (Wm. M.)—Description of some new genera of mollusca.—Proc. Acad. Nat. Sci. Philad. 1872, pp. 270 to 274 and plates.

Diagnoses published in advance of a more extended paper on W. Indian mollusca in preparation. The new genera are *Planorbella* (*Limacinidæ*), *Metulella* (*Muricidæ*), *Glyphostoma* (*Turridæ*), *Ectracheliza* (*Buccinidæ*), *Plochelæa* (*Olividæ*), *Iopsis* (*Eulimidæ*), *Orthaulax* and *Dolophanes* (*Stromaidæ*), *Actæonidea* (*Actæonidæ*), *Cylichnella* (*Bullidæ*), *Bothrocorbula* (*Corbulidæ*) and *Næromya* (*Anatinidæ*).

Byrnes (R. M.)—List of Land and Freshwater Shells found in the vicinity of Cincinnati; also, the Unionidæ of the Ohio River and its Northern Tributaries within the State of Ohio.—Dec. 1872, 3 pp.

Two hundred species are given in this label list, of which 90 are *Unionidæ*.

Journal de Conchyliologie.—Index general et systematique des matieres contenues dans les vingt premiers volumes du J. de C., publiés sous la direction de MM. Crosse, Fischer, Bernardi, et Petit de la Saussaye, 1850—1872.—8vo., Paris, 1878, pp. 200.

After an introduction reviewing the progress of the various departments of malacology since the foundation of the Journal, the present editors give: first, a table of authors alphabetically arranged, with the titles of their papers; and secondly an index of the species of molluscs described or cited. To all possessors of the series of volumes these indices will be of great service, and they

will also furnish a useful bibliographical guide to malacologists generally. The labour of compilation must have been enormous, otherwise one would be tempted to wish that the index had been much fuller. As it is, though there is a double reference to the author's names and to the names of the molluscs, there is no reference to the titles of articles. With regard to the index of molluscs it seems to us that MM. Crosse and Fischer would have adopted a much better principle if they had given the references to the specific instead of to the generic names.

A VARIATION IN THE COLOR OF THE ANIMAL OF *PLANORBIS CORNEUS*,

By WILLIAM NELSON.

During the summer of 1878 I visited a small cattle pond situated near to Temple View, York Road, Leeds. At one end of the pond is a dense growth of reeds, *Elodea canadensis*, *Callitriche verna* and *Lemna minor*, and several freshwater algæ; while the other end of the pond is shallow and quite destitute of plant life.

Dredging among the plants I obtained specimens of a dwarf form of *Spharium lacustre*, also *Pisidium pusillum* and *Planorbis nautilus* very plentifully. On proceeding to search the shallow end of the pond I was surprised to see a number of *Planorbis corneus*, many of them having the animal of a bright flesh or pink color, the animals being mostly protruding from the shell and very conspicuous. This somewhat remarkable divergence from the normal coloration of the animal was shared to some extent by the shell, which was much thinner, more diaphanous than the type, and suffused with a slight tinge of pink. Intermediate gradations of color connected this singular variation with the normal form. The phenomenon would appear merely to have been temporary, as it was in vain this spring that I again searched the pond, not being able to discover a single example of the species.

FIRST SKETCH OF A MARINE INVERTEBRATE
FAUNA OF THE GULF OF PARIA AND ITS
NEIGHBOURHOOD.

Part I.—Mollusca.

By R. J. LECHMERE GUPPY, F.L.S., C.M.Z.S., etc.

*(Extracted from the Proceedings of the Scientific Association of Trinidad,
December 1877, pp. 134 to 157.)*

The following list is only proposed as an instalment of the subject. It will be liable to large expansion, and doubtless to some revision. I waited for years to be able to furnish a more complete and perfect list; but I perceive that unless a beginning is made no progress can be expected, and I prefer therefore to publish the information I now possess, which can be added to from time to time as opportunity may offer.

All the species enumerated have been collected by myself either in the Gulf of Paria or on the coasts adjoining. Although consisting, for the most part, of names only, yet this list represents a very large amount of work, not only in collecting but in the study and identification of the shells, and in assigning to them their proper names, amid the heap of synonyms and inaccurate determinations with which unfortunately the science of malacology is burdened. My guide as to nomenclature has been chiefly Krebs' catalogue of the West Indian marine shells,—a work published for private circulation only, but which is most valuable for its suggestions as to synonymy. I have, however, allowed myself considerable liberty in the fusion of specific names allowed to stand in Krebs' list; for the author of that work, while condemning the "sickly passion" which possesses some naturalists for describing so-called new species, still allowed too many doubtful appellations to crowd his pages.

As regards the references to figures, I have generally selected such as portray the species fairly, and where possible I have chosen those most easily accessible to students; only citing the more expensive and larger works on conchology where the ordinary manuals failed me.

In the synonymy the names quoted may not, in all cases, have been originally intended for the species under which they here stand, but may have been incorrectly applied by some author. Owing to the close resemblance of some species of the eastern hemisphere to western ones, it has often happened that one name has been used for two distinct shells; and I am not sure that we have yet in all cases avoided the errors traceable to this source of confusion.

The principle on which the authorities are cited is that the specific names are assigned to the author who first described the species, and to the one who first adopted a particular collocation of generic and specific names. This principal has been generally acted up to by conchologists; but it is to be regretted that many writers on natural science have followed a different course, thereby introducing unnecessary disorder into nomenclature. The want of a definite enunciation of the rule may be somewhat to blame for this: I propose the following—"The author's name appended to a specific name is to be regarded as the authority for the specific name *only*."

The classification I have adopted is that I have used in my own cabinet. It is in the main based upon that of Woodward, by far the best ever published. Some of my innovations may seem hazardous, but I have never departed from my model without the most substantial reasons. I have long had in preparation a paper on this subject, but have not yet found the leisure to complete it. I can hardly say anything too strong against the systems devised by various conchological writers, as they seem to be founded on the most arbitrary and artificial

characters. I have, in a few instances, renamed the orders, not being able to find any satisfactory terms in use; but wherever I have done so I have derived the ordinal name from the most characteristic genus of the order.

Sub-kingdom MOLLUSCA.

CLASS CEPHALOPODA.

Order OCTOPODA.

OCTOPUS Cuvier.

1. *O. americanus* Orb.

O. vulgaris, D'Orbigny, Moll. Cuba, vol. i., p. 11, pl. i., f. 1.

Order DECAPODA.

LOLIGO Lamarck 1799.

2. *L. plei* Blainv. D'Orb. Moll. Cuba, vol. i., p. 42.

SEPIOTEUTHIS Férussac 1825.

3. *S. sepioidea* Blainv. Orb. Moll. Cuba, vol. i., p. 34.

SPIRULA Lamarck 1799.

4. *Sp. fragilis* Lam.

Sub-class SOLENOCONCHIA.

DENTALIUM Linné 1740.

5. *D. disparile* Orb. Moll. Cuba, vol. ii., p. 202, pl. xxv., f. 14-17.

CLASS GASTROPODA.

Order TECTIBRANCHIATA.

NOTARCHUS Cuvier 1817.

6. *N. laciniatus* Rüppell. Gray, Fig. Moll., pl. clii., f. 1.

ACLESIA Rang 1828.

7. *Acl. sp. indet.*

APLYSIA Linné 1767.

8. *Apl. nigra* Orb., Voy. Amer., Mer., p. 209, pl. xviii., f. 1, 2.

9. *Apl. sp. indet.*

BULLA Klein 1753.

10. **B. striata** Brug. Chenu, Man. Conch., vol. i., f. 2939-41.
 B. maculosa Mart.
 B. media Phil.
 B. umbilicata Bolt.

Order HOLOSTOMATA.

(Sub-order Pyramidellina.)

TURBONILLA Risso 1826.

11. **T. turris** Orb. Chenu, Man. Conch., vol. i., f. 1287.
 Chemnitzia turris Orb. Moll. Cuba, vol. i., p. 219, pl. xvi,
 f. 10-13.
 ,, *pulchella* Orb. l. c., p. 220, pl. xvi., f. 14-17.
 ,, *ornata* Orb. l. c., p. 221, pl. xvi., f. 18-21.
 ,, *modesta* Orb. l. c., p. 222, pl. xvi., f. 22-24.

(Sub-order Naticina.)

NATICA Adamson 1757.

12. **N. marocana** Chemn. Wood, Ind. Test. Nerita, 14.
 N. marochiensis (?) Lam.
 13. **N. canrena** Linn. Wood, Ind. Test. Nerita, 1.
 N. alapapilionis, Chemn. Chenu, Conch., vol. i., f. 1163.

Order CALYPTREACEA.

CREPIDULA Lamarck 1799.

14. **Cr. aculeata** Chemn. Chenu, Man. Conch., vol. i.,
 f. 2355-56.
 D'Orbigny, Voy. Amer. Merid., p. 464, pl. lviii., f. 4, 5.
 15. **Cr. porcellana**, Lam. Cuvier, Regne An., pl. xlvi., f. 5.
 Cr. protea, Orb. Moll. Cuba, vol. ii., p. 192, pl. xxiv., f. 30-33.

CALYPTREA Lamarck 1799.

16. **C. auriculata** Chemn. Reeve, C. I., Crucibulum, 15.
 C. cuvieri Desh. in Cuv. Regne An., pl. xlviil., f. 4.

TRUCHITA Schumacher, 1817.

17. *Tr. candeana* Orb. Moll. Cuba, vol. ii., p. 190, pl. xxiv.,
f. 28, 29.

Order DOCOGLOSSA.

PATELLA Linné 1752.

18. *P. elegans* Phil.

P. candeana Orb. Moll. Cuba, vol. ii., pl. xxv., f. 1-3.
Tectura fascicularis Menke.

Order CHITONACEA.

CHITON Linné.

19. *Ch. rugosus* Gray, Reeve, C. I. Chiton, 115.

Ch. squalidus Adams.

Ch. guildingi Reeve.

20. *Ch. segmentatus* Reeve.

Chætopleura janeirensis Gray.

Ch. apparata = *rufocostata*.

21. *Ch. caribeorum* Carpenter.

22. *Ch. marmoratus* Gmelin.

Order CERITHIACEA.

TURRITELLA Lamarck 1799.

23. *T. imbricata* Linn. Woodward, Man. Moll., pl. ix., f. 1.
Hanley, Ips. Linn. Conch., p. 344, pl. iii., f. 2 (pale var.)

CERITHIOPSIS Forbes.

24. *C. punctatum* Linn. (not Brug. nor Lam.)

C. emersoni Adams.

C. subulatum Montf.

CERITHIUM Bruguière 1789.

25. *C. gibberulum* Adams.

? *C. columellare* Orb. Moll. Cuba, vol. ii. p. 155, pl. xxiii.,
f. 13-15.

26. **C. caudatum** Sow.

LITORINA Férussac 1821.

27. **L. nodulosa** Gmel. Orb. Moll. Cuba, vol. i, p. 205, pl. xiv.,
f. 11—14.

L. dilatata, l. c., p. 207, pl. xiv., f. 20—23.

L. tuberculata l. c., p. 206, pl. xiv., f. 15—19.

28. **L. flava** King. D'Orb. Voy. Amer. Mer., p. 391, pl. liii.,
f. 1—3.

L. irrorata var. Petit.

29. **L. ziczac** Chemn. Chenu, Man. Conch., vol. i, f. 2107.

L. lineata Orb. Moll. Cuba, vol. i, p. 208, pl. xiv., f. 24—27.

30. **L. columellaris** Orb. Moll. Cuba, vol. i, p. 213, pl. xv.,
f. 18—20.31. **L. tigrina** Orb. l. c., vol. i, p. 211, pl. xv., f. 9—11.32. **L. angulifera** Lam. Chenu, Man. Conch., vol. i, f. 2093.L. scabra Orb. (as of Linn.) Moll. Cuba, vol. i, p. 212,
pl. xv., f. 15—17.

MODULUS Gray 1840.

33. **M. lenticularis** Chemn. Chenu, Man. Conch., vol. i,
f. 2122.34. **M. unidens** Chemn. Wood, Ind. Test. Trochus, 71.

Trochus perlatus Wood.

Monodonta carchedonius Lam.

SOLARIUM Lamarck 1799.

35. **S. tessellatum** Desh. Wood, Ind. Test., pl. xxix., f. 56.

Order VOLUTACEA.

VOLUTA Linné.

36. **V. musica** Linn. Woodward, Man. Moll., pl. vii., f. 9.

MARGINELLA Lamarck 1799.

37. **M. cœrulescens** Lam. Wood, Ind. Test., Voluta, 68.

M. subcœrulea Mart.

Voluta prunum Gmel.

38. ***M. marginata*** Born.

M. bivaricosa Lam. Chenu, Man. Conch., vol. i., f. 1057-8.

39. ***M. interrupta*** Lam.

CYPRÆA Linné.

40. ***C. exanthema*** Linn. Chenu., Man. Conch., vol. i., f. 1675.

Order CONACEA.

CONUS Linné.

41. ***C. testudinarius*** Mart.

PLEUROTOMA Lamarck 1799.

42. ***Pl. antillarum***, Orb. Moll. Cuba, vol. ii., p. 173, pl. xxiv.,
f. 1—3.

Order FUSACEA.

(*Sub-order Muricina.*)

MUREX Linné.

43. ***M. pomiformis*** Mart.

M. asperrimus Orb.

44. ***M. cornucervi*** Mart.

M. brevifrons Lam.

M. calcitrapa Lam.

M. purpuratus Reeve.

M. elongatus Lam.

45. ***M. similis*** Sow.

46. ***M. nuceus*** Mörch.

47. ***M. messorius*** Sow.

48. ***M. alveatus*** Kiener.

LAMPUSIA Schumacher 1817. (Triton auctt.)

49. ***L. antillarum*** Orb. Moll. Cuba, vol. ii., p. 161, pl. xxiii., f. 20.

L. tuberosum Reeve.

50. **L. succincta** Lam.

Triton americanum Orb. Moll. Cuba, vol. ii., p. 163,
pl. xxiii., f. 22.

51. **L. martiniana** Orb.

Murex pileare (Linn.) auctt.

RANELLA Lamarck.

52. **R. cubaniana** Orb. Moll. Cuba, vol. ii., p. 165, pl. xxiii.,
f. 24.

PERSONA Montfort 1810.

53. **P. reticularis** Linn.

(*Sub-order Fusina.*)

TURBINELLUS Lamarck 1799.

54. **T. nassa** Gmel. Chenu, Man. Conch., vol. i., f. 913.

T. cingulifera Lam. Kiener, Coq. Viv. Turbinellus, 23.

T. rudis Reeve.

T. brasiliensis Orb. Voy. Amer. Mer., p. 449, pl. lxxvii.,
f. 17.

T. knorri Desh. Wood, Ind. Test. Murex, 110.

55. **T. infundibulum** Gmelin. Wood, Ind. Test. Murex, 118.

T. gibbulus Gmel.

T. filiosus Lam. Chenu, Man. Conch., vol. i., f. 907.

FASCIOLARIA Lamarck 1799.

56. **F. tulipa** Linn. Woodward, Man. Moll., pl. v., f. 1.

PYRULA Lamarck 1799.

57. **P. melongena** Linn. Woodward, Man. Moll., pl. v., f. 7.58. **P. morio** Linn. Kiener, Coq. Viv. Fusus, 46.

Fusus coronatus Lam.

PUSIO Gray 1833.

59. **P. articulatus** Lamarck. Chenu, Man. Conch., vol. i.

f. 617.

Murex accinctus Born.

Buccinum pennatum Martini.

„ *plumatum* Gmel.

Purpura accincta Orb.

Fusus articulatus Kien. Coq. Viv. *Fusus*, 36.

(*Sub-order Strombina.*)

STROMBUS Linné 1740.

60. *Str. gigas* Linn. Chenu, *Man. Conch.*, vol. i., f. 1583.

Str. goliath Chemn., Chenu, *Man. Conch.*, vol. i., f. 1581.

61. *Str. gallus* Linn. Chenu, *Man. Conch.*, vol. i., f. 1588.

62. *Str. pugilis* Linn. Woodward, *Man. Moll.*, pl. iv., f. 1.

(*Sub-order Buccinina.*)

CASSIS Lamarck 1799.

63. *C. testiculus* Linn. Chenu, *Man. Conch.* vol. i., 1134.

DOLIUM Lamarck 1801.

64. *D. pennatum* Mart. (= *D. perdix* auctt.)

PURPURA Bruguière 1789.

65. *P. patulum* Linn. Wood, *Ind. Test.*, pl. xxii., f. 53.

66. *P. trapa* Bolt.

P. deltoidea, Lam.

67. *P. bicostalis* Lam.

P. hæmastoma Orb. *Moll. Cuba*, vol. ii., p. 144.

68. *P. undata* Lam.

P. bicarinata Kien.

P. nodus Wood, *Ind. Test. Murex*, 48.

69. *P. trinitatensis* Guppy, *Proc. S. A. Trin.*, vol. i., p. 366.

Ann. and Mag. Nat. Hist., Jan. 1875, p. 50.

70. *P. gigantea* Reeve.

Buccinum hæmastoma Chemn.

Purpura consul Kien. (not Lam.)

71. *P. plicata* Mart.*P. galea* Orb. (not Chemn.)72. *P. auriculata* Lam.*Buccinum coromandelianum* Lam.*Pollia tincta* Conrad.

RICINULA Lamarck 1812.

73. *R. turbinella* Kien. Woodward, Man. Moll., pl. iv., f. 15.*R. nodulosa* Adams.*R. carbonaria* Adams.*R. ferruginosa* Reeve.74. *R. lugubris* Adams.

PLANAXIS Lamarck 1822.

75. *Pl. nucleus* Lam. Chenu, Man. Conch., vol. i., f. 2143.

NASSA Lamarck 1822.

76. *N. antillarum* Orb. Moll. Cuba, vol. ii., p. 141, pl. xxxiii., f. 1—3.

COLUMBELLA Lamarck 1799.

77. *C. mercatoria* Linn. Woodward, Man. Moll., pl. vi., f. 10.78. *C. laevigata* Lam.*C. concinna* Sow. Wood, Ind. Test., pl. xxi., f. 134.*Voluta ocellata* Gmel.79. *C. argus* Orb. Moll. Cuba, vol. ii., p. 138, pl. xxxi., f. 34—37.*C. oscillatoria* Sow.*C. cribraria* Lam.

OLIVA Bruguière 1789.

80. *O. reticularis* Lam.*O. olivaceus* Mörch.81. *O. oryza* Lam.82. *O. nitidula* Dillw.*O. mutica* Reeve.*O. monilifera* Reeve.

Order TROCHACEA.*(Sub-order Trochina.)*

ASTRALIUM Link 1807.

- 83.
- Astr. rhodostomum**
- Lam.

TROCHUS Linné 1758.

- 84.
- Tr. byronianus**
- Gray.

Tr. hotessierianus Orb. Moll. Cuba, vol. ii, p. 59, pl. xviii,
f. 15—17.

Tr. canaliculatus Orb. l. c., vol. ii, p. 60, pl. xviii, f. 18—19.

- 85.
- Tr. excavatus**
- Lam.

Tr. umbilicaris Chemn.

TURBO Linné.

- 86.
- T. tuber**
- Linn.

(Sub-order Neritina.)

NERITA Linné.

- 87.
- N. peleronta**
- Linn. Wood, Ind. Test., pl. xxxvi, f. 46.

- 88.
- N. antillarum**
- Gmel. Wood, Ind. Test. Nerita, 45.

N. praecognita Adams.

NERITINA Lamarck 1809.

- 89.
- N. meleagris**
- Lam.

- 90.
- N. viridis**
- Linn. Chenu, Man. Conch., vol. i, f. 2460.

- 91.
- N. microstoma**
- Orb. Moll. Cuba, vol. ii, p. 47, pl. xvii,
-
- f. 35.

Order FISSURELLACEA.

FISSURELLA Lamarck 1801.

- 92.
- F. radiata**
- Lam.

CLASS CONCHIFERA.

Order PHOLADACEA.

PHOLAS Linné.

- 93.
- Ph. candeana**
- Orb. Moll. Cuba, pl. xxv, f. 18—19.

94. **Ph. costata** Linn. Chenu., vol. ii., f. 1—3.

MARTESIA Leach 1847.

95. **M. striata** Linn. Chenu., vol. ii., f. 48—50.
Woodward Man., pl. xxiii., f. 21.

TEREDO Linné.

96. **T. norvegica** Spengl. Woodward, Man., pl. xxiii., f. 26.

GASTROCHÆNA Lamarck 1818.

97. **G. hians** Chemn. Wood, Ind. Test. Pholas, 11.
G. cuneiformis Spengl. Chenu, vol. ii., f. 73.

Order ANATINACEA.

THRACIA Leach 1824.

98. **Thr. dissimilis** Guppy, Proc. S. A. Trinidad, vol. i., p. 368.
Ann. and Mag. Nat. Hist., Jan. 1875, p. 52.
Thr. plicata Reeve (not Deshayes), C. I., Thracia, 7.

PERIPLOMA Schumacher 1818.

99. **P. inequivalvis** Schum.

Order SOLENACEA.

SOLEN Linné.

100. **S. obliquus** Spengl. Wood, Appendix, pl. xi., f. 17.
S. ambiguus Lam. Chenu, Mat., vol. ii., f. 86.

101. **S. niveus** Hanley. Wood, Appendix, pl. xii., f. 40.

SOLECURTUS Blainville 1824.

102. **S. caribeus** Lam.

S. gibbus Spengler.

S. guinensis Dillwyn.

Order MYACEA.

CORBULA Bruguière 1792.

103. **C. cubaniana** Orb. Chenu, Man., vol. i., f. 137.
C. knoxiana Adams. Contr. Conch., p. 238.

104. **C. caribea** Orb. Moll. Cuba, pl. xxvii., f. 5—8.
 C. swiftiana Adams. Contr. Conch., p. 236.
 C. kjoeriana Adams, l. c., p. 237.

Order MACTRACEA.

MACTRA Linné.

105. **M. tumida** Chemn. Wood, Ind. Test. Mactra, 8.
 M. turgida Gmel. Chenu, Man., vol. ii., f. 223—4.
 M. guadelupensis Recluz.
 106. **M. pellucida** Chemn.
 M. ovalina Lam.
 M. fragilis Wood, Ind. Test. Mactra, 32.
 M. brasiliana Lam. Wood, Appendix, pl. x., f. 60.
 107. **M. alata** Spengl. Wood, Ind. Test. Suppl. Mactra, 7.
 M. carinata Lam. Chenu, Man., vol. ii., f. 227—8.

Order LUCINACEA.

(Sub-order Donacina.)

IPHIGENIA Schumacher 1817.

108. **I. braziliensis** Lam. Woodward, pl. xxi., f. 20.

DONAX Linné.

109. **D. denticulatus** Linn. Woodward, pl. xxi., f. 19.
 110. **D. striatus** Linn. Wood, Appendix, pl. xiv., f. 32.
 111. **D. pulchellus** Hanley. Wood, Appendix, p. xiv., f. 19.
 D. powisianus Recluz.

ASAPHIS Modeer 1793.

112. **A. deflorata** Linn.
 A. rugosa Lam. Chenu, Man., vol. ii., f. 256.

(Sub-order Lucinina.)

SEMELE Schumacher 1817.

113. **S. reticulata** Linn. Woodward, pl. xxi., f. 11.
 114. **S. decussata** Gray. Wood, Ind. Test. Tellina, 81.
 Amphidesma jayanum Adams.

115. **S. variegata** Lam. Wood, Ind. Test. Tellina, 17.
S. purpuraceus Gmel.

ERVILIA Turton 1822.

116. **E. nitens** Turt. Woodward, pl. xxi., f. 18.

TELLINA Linné.

117. **T. interrupta** Wood, Ind. Test. Tellina, 4.

T. listeri Bolten.

T. maculosa Lam.

118. **T. punicea** Born. Wood, Ind. Test. Tellina, 47.

T. angulosa Gmel. Wood, l. c., Tellina, 64.

T. striata Chemn.

T. alternata Say.

Donax martinicensis Lam.

119. **T. rufescens** Chemn. Wood, Ind. Test. Tellina, 37.

T. operculata Gmel.

120. **T. gruneri** Phil.

T. interstriata Say.

T. inornata Adams.

121. **T. fausta** Dillwyn. Wood, Ind. Test. Tellina, 74.

T. remies Born (not Linn.)

T. lævis Wood, Ind. Test. Tellina, 68.

122. **T. radiata** Linn. Chenu, Man., vol. ii., f. 272.

123. **T. sexradiata** Lam. Wood, Appendix, pl. xi., f. 37.

124. **T. exilis** Lam.

125. **T. candeana** Orb. Moll. Cuba, pl. xxv., f. 50—52.

TELLIDORA Mörch (?)

126. **T. schrammi** Recluz.

STRIGILLA Turton 1822.

127. **Str. carnaria** Linn. Woodward, pl. xxi., f. 6.

128. **Str. flexuosa** Say.

Tellina mirabilis Phil.

LUCINA Bruguière 1792.

129. **L. pensylvanica** Linn. Woodward, pl. xix., f. 6.
130. **L. jamaicensis** Spengler. Chenu, vol. ii., f. 66.
131. **L. pecten** Lam.
 L. costata Orb. Moll. Cuba, pl. xxvii., f. 40—42.
 L. textilis Phil.
 L. antillarum Reeve.
132. **L. scabra** Lam. Chenu, vol. ii., f. 576.
 Tellina imbricata Chemn.
 L. scobinata Recluz.
 L. muricata Orb. (not Chemn.)
133. **L. muricata** Chemnitz.
 L. scabra Reeve (not Lam.)
134. **L. nasuta** Conr.
 L. imbricata Adams. Contr. Conch., p. 245.
 L. obliqua Reeve (not Phil.)
 L. pectinata Adams. Contr. Conch., p. 245.
 L. pecten Reeve.
 L. occidentalis Reeve.
135. **L. semireticulata** Orb. Voy. Amer. Mer., pl. lxxxiv., f. 7—9.
 L. granulosa Adams. Proc. Bost. Soc., 1845.
136. **L. quadrisulcata** Orb. Moll. Cuba, pl. xxvii., f. 34—36.
 L. serrata Orb. Moll. Cuba, pl. xxvii., f. 37—39.
 L. divaricata Lam. (not Linn.) Chenu, vol. ii., f. 572.
 L. americana Adams. Contr. Conch., p. 243.
 L. chemnitzii Phil.
 L. pilula Adams. Contr. Conch., p. 246.

DIPLODONTA Brown 1831.

137. **D. brasiliensis** Phil. Chenu, Man., vol. ii., f. 590.
138. **D. candeana** Orb. Moll. Cuba, pl. xxvii., f. 43—45.

LUCINOPSIS Forbes 1848.

- 139.
- L. tenuis**
- Recluz.

DOSINIA Scopoli 1777.

- 140.
- D. philippii**
- Orb. Moll. Cuba., vol. ii., p. 270.

Cytherea concentrica Lam. (not Born).

,, patagonica Phil.

Order ASTARTACEA.

CRASSINELLA Guppy 1875.

- 141.
- Cr. martinicensis**
- Orb. Moll. Cuba, pl. xxvii., f. 21—23.

Crassatella guadelupensis Orb. l. c., pl. xxvii., f. 24—26.

Order VENERACEA.

PETRICOLA Lamarck 1801.

- 142.
- P. typica**
- Jonas. Mollusk. Beitr., pl. vii., f. 3.

- 143.
- P. gracilis**
- Desh. Proc. Zool. Soc., 1853.

CYTHEREA Lamarck 1809.

- 144.
- C. hebræa**
- Lam. Wood, Appendix, pl. xiii., f. 21.

C. rubiginosa Phil.

C. varians Hanley. Wood, Appendix, pl. xv., f. 33.

- 145.
- C. albida**
- Gmel. Wood, Appendix, pl. xv., f. 31.

C. affinis Gmel.

C. læta Lam. (not Lin.)

- 146.
- C. convexa**
- Say. Wood, Appendix, pl. x., f. 34.

- 147.
- C. dione**
- Linn. Chenu. Man., vol. ii., f. 378—379.

[N.B.—Woodward's figure (Man., pl. xx., f. 8) represents

C. lupinaria Lesson.]

TRIGONA Megerle 1811.

- 148.
- Tr. trigonella**
- Lam. Wood, Appendix, pl. xiii., f. 18.

- 149.
- Tr. mactroides**
- Born. Wood, Ind. Test. Venus, 33.

Cytherea corbicula Lam. Chenu, vol. ii., f. 385—387.

VENUS Linné.

- 150. **V. flexuosa** Linn. Chenu, vol. ii., f. 360.
 V. macrodon Lam. Wood, Appendix, pl. ix, f. 7.
 V. punctifera Gray.
- 151. **V. paphia** Linn. Woodward, pl. xx., f. 6.
- 152. **V. cancellata** Linn. Wood, Ind. Test. Venus, 6.
 V. cingenda Dillwyn.
 V. dysera Orb.
- 153. **V. granulata** Gmel. Wood, Ind. Test. Venus, 29.
 V. violacea Gmelin.
 V. marica Chemnitz.
- 154. **V. pectorina** Lam.
 V. elegans Gray. Wood, Ind. Test. Suppl., pl. ii., f. 3.
- 155. **V. eximia** Phil.
 ? *V. portesiana* Orb. Voy. Amer. Mer., pl. lxxxiii., f. 1, 2.
- 156. **V. rugosa** Chemn. Wood, Ind. Test. Venus, 13.
 V. rigida Dillwyn.

Order CARDIACEA.

CARDIUM Linné.

- 157. **C. muricatum** Linn. Wood, Ind. Test. Cardium, 14.
- 158. **C. eburniferum** Guppy. Proc. S. A. Trinidad, vol. i.,
 p. 367. Ann. and Mag. Nat. Hist., Jan. 1875, pl. vii., f. 3.
 [N.B.—Like *C. isocardium*, but having the vaulted scales
 much stouter and more crowded.]
- 159. **C. leucostomum** Born.
 C. elongatum Lam. Wood, Appendix, pl. xvii., f. 16.
 C. subelongatum Sow.
 C. marmoreum Lam.
- 160. **C. oviputamen** Reeve.

161. **C. citrinum** Chemn. Wood, Ind. Test. Cardium, 22.
 C. serratum Linn.
 C. lævigatum Lam.

162. **C. haitense** Sow. Geol. Journ., vol. vi., pl. x., f. 11.
 Ann. and Mag. Nat. Hist., Jan. 1875, p. 51.

CARDITA Bruguière 1789.

163. **C. pectunculus** Brug. Chenu, vol. ii., f. 655—656.

CHAMA Bruguière 1789.

164. **Ch. macrophylla** Chemn. Wood, Ind. Test. Chama, 19.
 Ch. imbricata Lam.
 Ch. lazarus Lam. (not Linn.)
 Ch. gryphoides Dillw. (not Linn.)

165. **Ch. florida** Lam.

166. **Ch. ruderalis** Lam.

Order MYTILACEA.

(*Sub-order Mytilina.*)

PINNA Linné.

167. **P. ramulosa** Reeve. C. I., Pinna, 52.
 P. seminuda auctt. (as of Lam.)
 P. rigida (Solander) Orb. Wood, Ind. Test. Pinna, 7.
 P. nobilis Chemn. (not Linn.)
 P. orbigny Hanley, Reeve, C. I., Pinna, 49.

MYTILUS Linné.

168. **M. americanus** Favart.
 M. modiolus Chemn. (not Linn.)
 M. tulipa Lam. (part.)

169. **M. brasiliensis** Chemn.
 M. guianensis Lam.
 M. semifusca Sow.

170. **M. ligneus** Reeve.
 [This species spins a bag entirely covering the shell. It is

extremely rare, and lives in 2 to 3 fms. water, on a bottom of sandy mud. No locality is given by Reeve for his shell.]

171. **M. exustus** Linn. Orb. Moll. Cuba, pl. xxviii., f. 6, 7.
M. citrinus Chemn. Wood, Ind. Test. Arca, 15.
M. sulcata Lam.
172. **M. domingensis** Lam. Orb. Moll. Cuba, vol. ii., pl. xxviii.
 f. 8, 9.
M. exustus Lam.

CRENELLA Brown 1827.

173. **Cr. viator** Orb. Voy. Amer. Mer., pl. lxxxiv., f. 34—37.

LITHODOMUS Cuvier 1817.

174. **L. bipenniferus**, Guppy. Proc. S. A. Trinidad, Dec. 1877,
 p. 154—5.

Elongate, sub-cylindrical, nearly straight, smooth, thin, epidermis yellowish-brown, generally incrustated with a blackish deposit, running posteriorly into white pointed calcareous rostriform appendages which cross each other, in different specimens with the beak of either above or below. Umbones round, terminal. Ventral edge scarcely curved. Dorsal edge slightly angulate. Length 35—45, height 10, thickness 11 mill.

This shell differs from *L. caudigerus*, its West African analogue, in being more cylindrical; the umbones are usually less prominent and more nearly terminal; the dorsal edge has rarely so pronounced an angle. Burrows in soft limestone and corals.

(*Sub-order Pectinina.*)

PERNA Bruguière 1792.

175. **P. obliqua** Lam.
P. ephippium Sow. (not Linn.) Woodward, pl. xvii., f. 2.
Ostrea alata Gmelin.

176. **P. chemnitziana** Orb.

P. vulcella (b) Lamarck.

Concha semiaurita Chemnitz.

Perna bicolor Adams.

PECTEN (Gualtieri) Bruguière 1797.

177. **P. nucleus** Born. Wood, Ind. Test. *Ostrea*, 47.

P. turgidus Lam.

178. **P. nodosus** Linn. Chenu, vol. ii, f. 922.179. **P. circularis** (?) Sow. Thes. Conch., pl. xii., f. 23.

LIMA Bruguière 1792.

180. **L. scabra** Born. Chenu, Man., vol. ii., f. 954, 955.

L. aspera Chemn.

L. bullata Born.

L. fragilis Lam.

L. inflata Lam.

L. glacialis Lam.

L. pellucida Adams.

PLICATULA Lamarck 1801.

181. **Pl. cristata** Lam. Woodward, pl. xvi., f. 17.

Ostrea spondyloidea Meuschen.

Spondylus plicatus Chemn.

Pl. reniformis Lamarck.

(*Sub-order Ostreina.*)

OSTREA Linné.

182. **O. frons** Linn. Wood, Ind. Test. *Mytilus*, 3.

O. parasitica Gmel. (part). Wood, Ind. Test., pl. xi., f. 71.

O. radicum Chemn.

O. arborea Chemn.

O. rubella Lam.

O. limacella Lam. Chenu, Man., vol. ii., f. 1005.

O. erucella Lam.

O. folium Reeve (not Linn.)

O. rhizophoræ Guilding.

Order ARCACEA.

LEDA Schumacher 1817.

183. **L. jamaicensis** Orb. (var.) Chenu, vol. ii., f. 901—903.

ARCA Linné.

184. **A. umbonata** Lam. Wood, Ind. Test. Arca, 14.

A. ventricosa Lam.

A. mutabilis Reeve.

A. americana Orb. (not Gray). Moll. Cuba, pl. xxviii,
f. 1, 2.

A. noæ auctt. (not Linn.)

185. **A. occidentalis** Phil.

A. navicularis Brug. Wood, Ind. Test. Arca, 5.

186. **A. listeri** Phil.

A. fusca Brug.

A. granulata Meusch.

187. **A. incongrua** Say. Wood, Appendix, pl. xviii., f. 44.

A. braziliana (?) Lam. Wood, Ind. Test. Suppl. Arca, 7.

A. inequivalvis (?) Brug.

188. **A. adamsi** Shuttl.

189. **A. americana** Gray. Wood, Ind. Test. Suppl. Arca, 1.

A. pexata (?) Say.

190. **A. centrota** Guppy. Proc. S. A. Trinidad, vol. i., p. 368.

Ann. and Mag. N. Hist., Jan. 1875, pl. vii., f. 4.

191. **A. floridana** Conrad (var.)

192. **A. auriculata** Lam. Chenu, vol. ii., f. 865, 866.

193. **A. squamosa** Lam. (not Gray).

A. donaciformis Reeve. Chenu, vol. ii., f. 863.

A. divaricata Sow.

A. domingensis Lam.

A. angulata Meuschen.

PECTUNCULUS Lamarck 1801.

194. *P. decussatus* Linn.

P. pennaceus Lam.

P. undatus Lam.

P. angulatus Lam.

P. hirtus Phil.

MISCELLANEOUS NOTES.

THE LATE C. R. THATCHER.—Our readers will regret to learn of the recent decease of this well-known conchological collector. Several months ago he started on a five years' collecting tour, and had made the most careful arrangements for deep-sea and shallow dredging. Attacked suddenly by fever he died a few days after reaching Shanghai. His loss is almost irreparable and his abilities were great. To his indefatigability we owe the discovery of the unique *Thatcheria mirabilis* (Angas, P.Z.S.), which will now be his most enduring memorial; also of *Delphinulopsis Lesourdi*, described by Bryce Wright in the French Journal de Conchyliologie. Many other interesting forms are due to his labors.

THE FORMATION OF CONCHOLOGICAL LIBRARIES.—Such of our readers as are engaged in the formation of a special library will derive considerable assistance from the Book-Catalogues periodically published by Mr. Wm. Wesley of London, and Messrs. R. Friedländer & Sohn of Berlin. These catalogues are unrivalled in their comprehensiveness, and the one for British, the other for continental literature, will be of great assistance. The Berlin firm have also commenced the issue of a fortnightly publication under the title of 'Naturæ Novitates,' which is intended to give immediate information of the publication of scientific memoirs of all kinds and in all languages.

BIBLIOGRAPHY.

1 8 7 3.

Dall (W. H.)—Catalogue of the Recent Species of the class Brachiopoda.—Proc. Acad. Nat. Sci. Philad. 1873, pp. 177 to 204.

Synonymy and Distribution given for 6 species of *Terebratula* Auct., 8 *Terebratulina* D'Orb., 9 *Waldheimia* King, 12 *Terebratella* D'Orb., 2 *Laqueus* Dall, 3 *Megerlia* King, 11 *Magasella* Dall, 4 *Kraussina* Dav., 1 *Bouchardia* Dav., 3 *Platidia* Costa, 1 *Megathyris* D'Orb., 6 *Cistella* Gray, 2 *Thecidium* DeFrance, 6 *Rhynchonella* Fischer, s.g. *Hemithyris* D'Orb., 1 *Dimerella* Zittel, 4 *Crania* Retzius, 8 *Discina* Lam. (subgenera *Discina* Dall, *Discinisca* Dall) 11 *Lingula* Brug., and 6 *Glottidia* Dall, besides doubtful species, and several varieties.

Garrett (Andrew). — Descriptions of New Species of Marine Shells inhabiting the South Sea Islands.—Proc. Acad. Nat. Sci. Philad. 1873, pp. 209 to 231, and plates ii., iii.

Rissoina supracostata (Viti), *R. sculptilis* (Viti), *R. millicostata* (Viti), *R. oryza* (Viti), *R. horrida* (Viti), *R. scaba* (Viti), *R. costatogranosa* (Viti), *R. gracilis* (Viti), *R. debilis* (Viti), *R. affinis* (Viti), *R. terebra* (Viti and Samoa), *R. turrita* (Society), *Vitrinella pura* (Viti), *V. liricincta* (Viti), *V. sculptilis* (Viti), *V. cælata* (Viti), *V. nodosa* (Viti), *Cheletropis crenilabris* (Paumotus), ?*Rissoa vitrea* (Viti), ?*R. littorinaeformis* (Viti), *R. infrastricta* (Viti), ?*R. infratincta* (Viti), *R. venusta* (Viti), ?*R. crystallina* (Viti), ?*R. hyalina* (Samoa, Viti, and Paumotus), *R. truncata* (Viti), *Volvaria (Volvarina) pygmaea* (Viti), *Drillia vidualoides* (Viti), *D. papillosa*

(Viti), *D. minutissima* (Viti), *D. pusilla* (Viti, Cook's & Paumotus), *Clathurella pulchella* (Viti), *C. dædalea* (Viti), *C. cælata* (Viti), *C. infrasulcata* (Viti), *C. obesa* (Viti), *C. semilineata* (Samoa & Viti), *C. pinguis* (Samoa and Viti), *C. punctifera* (Society, Samoa and Viti), *Cithara melanostoma* (Viti), *C. abbreviata* (Paumotus), *Odostomia densecostata* (Samoa and Viti), *O. exilis* (Viti), *O. densestriata* (Viti), *O. oryza* (Viti), *O. sulcata* (Viti), *O. amanda* (Viti), *O. pulchra* (Viti), *O. crystallina* (Viti), *O. lutea* (Viti), *O. obeliscus* (Viti), *O. vitrea* (Viti), *O. unilineata* (Viti), *O. cuspidata* (Viti), *Rissopsis typica* (Viti and Samoa), *Obeliscus hyalidus* (Paumotus and Society), *Nassa anthracina* (Viti), *Daphnella fusiformis* (Paumotus), *D. millegrana* (Paumotus), *D. vitrea* (Paumotus), and *D. tessellata* (Paumotus).

Garrett (Andrew).—Description of a New Species of Goniodoris.—Proc. Acad. Nat. Sci. Philad. 1873, p. 232, and plate iv.

G. Tryoni, Society Islands.

Garrett (Andrew).—Descriptions of New Species of Land Shells inhabiting the South Sea Islands.—Proc. Ac. Nat. Sci. Philad. 1873, pp. 233 to 237.

Pupina Vitiensis (Viti), *Helicina Gomeaensis* (Gomea, Viti group), *Pitys Maupiensis* (Maupiti, Society group), *P. Tanee* (Maupiti, Society group), *P. zebrina* (Rarotonga), *P. unilamellata* (Rarotonga), *Plecotrema turrita* (Viti), *P. consobrina* (Viti), *Pedipes subglobosus* (Viti), *Nanina Kivaensis* (Kiva I., Viti group), *Helix (Trochomorpha) Merzianoides* (Viti).

Bland (Thomas) and Binney (W. G.).—On the Lingual Dentition and Jaw of certain Terrestrial Pulmonata from the United States, with remarks on their systematic value.—Proc. Acad. Nat. Sci. Philad. 1873, pp. 240 to 256, and plate i.

Notes on many species of the genera *Macrocyclus*, *Limax*,

Zonites, *Vitrina*, *Helix*, *Glyptostoma* (a new subgenus characterized at p. 244) and *Succinea*. The paper also includes a list of the species noted by the authors in various other publications, as a summary of their observations and the conclusions arrived at therefrom.

Hassler (Dr. F. A.)—Tenacity of Life in *Littorina muricata*.—*Acad. Nat. Sci. Philad.* 1873, p. 284.

The author in this note details experiments on 140 individuals from St. Domingo.

Stearns (Robert E. C.)—Descriptions of New Marine Shells from the West Coast of Florida.—*Proc. Acad. Nat. Sci. Philad.* 1873, pp. 344 to 347 and 4 cuts.

These are *Anachis semiplicata*, *A. acuta*, *Nitidella pilosa*, and *Clathurella Jewetti*.

Lea (Isaac).—Description of Seven New Species of Unionidæ of the United States.—*Proc. Acad. Nat. Sci. Philad.* 1873, pp. 422 and 423.

U. infulgens, *U. subolivaceus*, *U. cirratus*, *U. subcylindraceus*, *U. hastatus*, *U. corneus*, and *U. strumosus*.

Lea (Isaac).—Description of Three New Species of Uniones of the United States.—*Proc. Acad. Nat. Sci. Philad.* 1873, p. 424.

U. Dooleyensis, *U. invenustus*, and *U. Gesnerii*.

Sowerby (G. B., jun.)—Descriptions of Twelve New Species of Shells.—*P. Z. S.*, Nov. 4, 1873, pp. 718 to 722, and plate lix, coloured.

The species are *Cyclostoma balteatum* (Madagascar), *C. filostriatum* (Madagascar), *C. consanguineum* (Madagascar), *Typhis expansus* (Hab. —?), *Entrochus alternatus* (Australia?), *Tornatella*

alba (Port Elizabeth, Cape of Good Hope), *Pyramidella canaliculata* (Sandwich Islands?), *Pleurotoma* (*Drillia*) *brunneomaculata* (California?), *P. (D.) strigata* (Hab.—?), *Cardium arcuatulum* (Hab.—?), *Conus racemosus* (Sandwich Islands), and *Cancellaria turrita* (Hab.—?).

1874.

Marrat (F. P.)—New Species of Shells [genus *Nassa*].—
Mag. Nat. Hist., Jan. 1874, one-page reprint.

Three new *Nassæ* are described:—*N. elongata* (China Seas), *N. lirata* (Philippines) and *N. lucida* (Keelings Island). The paper also includes a series of notes on the synonymy of various species.

Conrad (T. A.)—Remarks on the Tertiary Clay of the Upper Amazon, with descriptions of New Shells.—
Proc. Acad. Nat. Sci. Philad. 1874, pp. 25 to 32, and plate i.

The new species are *Pachydon* (*Anisorhyncus*?) *dispar*, *P. erectus*, *P. altus*, *P. cuneata*, *P. (A.) cuneiformis*, *Dresseina* (*Mytiloides*) *scripta*, *Anodonta Pebasana*, *Triquetra longula*, *Ostomya papyria*, *Planorbis Pebasana*, *Pachytoma tertiana*, *Toxosoma eborea*, *Cirrobasis venusta*, *Liosoma curta*, *Cyclocheila Pebasana*, *Hemisinus Steerei*, and *Ebora crassilabra*.

Binney (W. G.)—On the Anatomy and Lingual Dentition of Ariolimax and other Pulmonata.—Proc. Acad. Nat. Sci. Philad. 1874, pp. 33 to 63, and plates ii. to xi.

An elaborate memoir, dealing with numerous species of the genera *Zonites*, *Hemphillia*, *Helix*, *Patula*, *Macrocyclis*, *Amphibulina*, *Gonospira*, *Nanina*, *Glandina*, *Pupa*, *Strophia*, *Bulinulus*, (and s.g. *Pachyotus*) *Succinea*, *Lithotis* and *Erinna*. The author

concludes with a review of his work on this subject, to ascertain whether reliance may safely be placed on these characters (dentition, &c.) as a basis for subgeneric distinction.

Chapman (Dr.)—Generative Apparatus of Tebenno-phorus Carolinensis.—Short note in Proc. Acad. Nat. Sci. Philad. 1874, pp. 79, 80.

Conrad (T. A.)—Description of Two New Fossil Shells of the Upper Amazon.—Proc. Acad. Nat. Sci. Philad. 1874, pp. 82, 83, and plate xii.

Haplothærus capax and *Hemisinus tuberculiferus*. Figures are also given of *Pachydon tenuis* and another species of *Pachydon*.

Lewis (James, M.D.)—Description of a New Species of Helix.—Proc. Acad. Nat. Sci. Philad. 1874, pp. 118, 119, and woodcut.

Helix (Mesodon) Lawii from North Carolina.

Lewis (James, M.D.)—On a New Variety of Helix.—Proc. Acad. Nat. Sci. Philad. 1874, p. 162.

The variety is *cincta* of *Helix (Stenotrema) monodon* Racket, from North Carolina.

Lacaze-Duthiers (H. de).—The Acoustic Nerve in Dentalium.—Note sur le Nerf acoustique du Dentale.—Arch. de Zool. Exp. et Gen. iii., pp. 20, 21, Paris, 1874.

Noticed by Dr. H. von Ihering in the Jahrbücher, April 1876, iii., 190.



PROCEEDINGS OF THE CONCHOLOGICAL SOCIETY
OF GREAT BRITAIN AND IRELAND.

1878.

Meetings held at the Society's room, Leopold Square, Leeds.
Mr. William Nelson, President.

NEW MEMBERS ELECTED :

Mr. Otto Semper, Altona.
Mr. William Cash, F.G.S., Halifax.
Mr. W. Hill Evans, M.D., Bradford.
Mr. Bryce McMurdo Wright, F.R.G.S., London.
Mr. Alfred Leicester, Liverpool.
Mr. James Wm. Davis, F.S.A., F.I.S., F.G.S., Halifax.
Prof. Finley M. Witter, Muscatine, Iowa.
Mr. E. T. Dowson, Geldeston, Beccles.
Mr. W. R. Jeffrey, Ratham, Chichester.
Mr. F. Hepburn, Sutton, Surrey.

Honorary Member.—Dr. W. Kobelt, Schwannheim-am-Main, was elected the first of ten honorary members, in recognition alike of services rendered to the Society and of his high scientific attainments.

DONATIONS TO THE LIBRARY

announced and thanks voted to the respective donors:—

Dr. Kobelt's continuation of Rossmässler's Iconographic, iv.
Band, Erste bis dritte Lieferung: 1878, 15 plates.

[The Author.

Illustriertes Conchylienbuch, three parts. [Dr. W. Kobelt.

Yorkshire Geological Society's Proceedings. [The Society.

Fauna d. Nassauischen Mollusken, 1871, by Dr. W. Kobelt.
[Mr. Robert Scharff.

DONATIONS TO THE MUSEUM.

were announced as follows, and thanks voted to the respective donors:—

Fifty-two species of Land and Freshwater Shells from Germany, viz.:—

- Helix pomatia*, L., Frankfort.
- H. nemoralis*, L., Frankfort.
- H. hortensis*, Müll., Frankfort.
- H. arbustorum*, L., Frankfort: Heidelberg, sub-fossil (tertiary beds called loess).
- H. fruticum*, Müll., Frankfort: (banded), Kärnthen.
- H. lapicida*, L., Taunus Mountains and Frankfort Woods.
- H. ericetorum*, Müll., near Maintz.
- H. rotundata*, Müll., Frankfort.
- H. strigella*, Drap., Heidelberg and Florsheim.
- H. obvoluta*, Müll., Taunus Mountains and Heidelberg.
- H. personata*, Lam., Taunus Mountains and Heidelberg.
- H. incarnata*, Müll., Taunus Mountains and Heidelberg; sub-fossil (tertiary beds called loess).
- H. rufescens*, Pennant, Taunus Mountains.
- H. pulchella*, Müll., Alluvium of River Maine.
- H. costata*, Müll., Alluvium of River Maine.
- H. candidula*, Stud., Frankfort; Lower Miocene, Hochheim.
- H. depilata*.
- Clausilia laminata*, Mont., Taunus Mountains.
- C. biplicata*, Mont., var. *albida*, Frankfort.
- C. parvula*, Stud., var. *albida*, Taunus Mountains.
- C. ventricosa*, Drap., Frankfort Woods.
- C. nigricans*, Pult., Taunus Mountains.
- C. dubia*, Drap., Frankfort Woods.
- Pupa frumentum*, Drap., Hochheim and in Alluvium.
- P. muscorum*, L., Alluvium of River Maine.
- P. doliolum*, Brug., Taunus Mountains.
- P. pygmæa*, Drap., Alluvium of River Maine.
- P. minutissima*, Hart., Alluvium of River Maine.
- Hyalina nitidula*, Drap., Frankfort.

- Hyalina nitida*, Frankfort.
H. crystallina, Müll., Frankfort.
Bulinus detritus, Müll., Hochheim.
 " " var. *radiata*, Maintz.
B. montanus, Drap., Taunus Mountains; Frankfort Woods;
 Heidelberg, sub-fossil (loess).
B. obscurus, Müll., Taunus Mountains and Frankfort Woods.
Vitrina ?, Taunus Mountains.
Cionella lubrica, Müll., Frankfort Woods and Alluvium.
C. acicula, Müll., Alluvium.
Cyclostoma elegans, Drap., Odenwald, near Heidelberg.
Neritina fluviatilis (small form), Müll., River Nidda.
Physa hypnorum, L., Frankfort.
Succinea putris, L., Frankfort.
Planorbis Rossmässleri, Auerswald.
P. spirorbis, Müll., Frankfort.
P. nitidus, Müll., Frankfort.
Segmentina lineata, Frankfort.
Limnæa stagnalis, Müll., and var., Frankfort.
L. roseolabiata, Sturm, Frankfort.
Cycas rivicola, Lam., River Maine.
C. cornea, L., River Maine.
Pisidium fontinale, C. Pfeiffer, near Frankfort.
Limnæa auricularia, Müll.
L. ampla. [Mr. Robert Scharff.
 A specimen of *Helix rufescens* from Skipton, with the spire
 remarkably raised. [Mr. Robert Scharff.
 Specimens of *Balea perversa*, *Clausilia rugosa*, *Helix hispida*
 and *Zonites nitidulus* from Ambleside.
 [Mr. Robert Scharff.
Sphærium sulcatum, Lam., Wayne Co., Michigan.
S. striatinum, Lam., Ann. Arbor, Mich.
S. securis, Prime, Ann Arbor, Mich.
Limnæa humilis, Say, Grand Rapids, Mich.
Pleurocera subulare, Lea, River Rouge, Mich.
P. canaliculatum, Say, Cincinnati, Ohio.
Planorbis campanulatus, Say, Detroit River, Mich.
Goniobasis livescens, Menke, Erie Co., New York.
Melantho integra, Say, Evan's Lake, Mich.
M. obesa, Lewis, South Bend, Indiana. [Mr. Wm. Nelson.

H. Carthusiana, Lewes, *H. hybrida*, Faversham, *H. hybrida*, Bilton near Bath, *H. palliata*, Say, East Tennessee, *H. ligera*, Lock Haven, Penn. [Mr. J. W. Taylor.

Valvata tricarinata, Say, Erie Canal, New York, *Bythinia tentaculata*, Pond, Alum Rock, near Birmingham.

[Mr. Wm. Nelson.

Alexia meridionalis, Semaphore, South Australia, *Elenchus iriodontes*, Semaphore, South Australia, *Succinea strigata*, Manoora, South Australia, *Clausilia parvula*, Friburg, *Triodopsis hirsuta*, Say, Hamilton Co., Ohio, *Linnæa stagnalis* var. *fragilis*, Folkestone.

[Mr. J. W. Taylor.

NORWEGIAN MARINE MOLLUSCA.

Mr. JOHN W. TAYLOR exhibited a number of shells taken off the Norwegian coast by the Rev. A. Merle Norman, M.A., including the following:—*Leda pernula*, 120 f., N. of Bukkar; *Arca nodulosa*, 80 f.; *Dentalium abyssorum*, 375 f., Oster Fiord; and *Cylichna alba*, 180 f. Kors Fiord.

GUNDLACHIA DISCOVERED IN TASMANIA.

Mr. TAYLOR also exhibited *Gundlachia Petterdi*, Johnst., discovered in Tasmania recently by Mr. Petterd. The genus had only previously been known as an American one, several species having been described by various authors. [See *J. C.* ii. p. 137].

VARIATION OF COLOR IN ANIMAL OF PLANORBIS CORNEUS.

Mr. WILLIAM NELSON showed specimens of a remarkable variation in the color of the animal of *Planorbis corneus*, found near Leeds. [See Mr. Nelson's note at page 150 of the present volume.]

A VARIETY OF COCHLICOPA TRIDENS NEW TO BRITAIN.

Mr. JOHN W. TAYLOR reported the discovery of a variety of *C. tridens* new to Britain, the var. *Alzenensis*, St. Simon, distinguished from the type by the presence of two additional denticles deeply seated on the palatal margin; the specimens were found at Dorridge, near Knowle, by Mr. Nelson.

MOLLUSCA OF ARCACHON.

A "List of the Mollusca occurring in the Bassin d' Arcachon," by Mr. ROBT. SCHARFF, of Bordeaux, was read, in which were included 162 species.

NOTES ON THE SYNONYMY OF *LIMNÆA PEREGRINA*.

Mr. WILLIAM NELSON read a paper in which he stated that having recently received from Mr. W. T. Bednall of Adelaide, specimens of Tenison Woods' new species, *Limnæa Hobartensis* (Proc. Roy. Soc. Tas., 1875, p. 71), he is decidedly of opinion that it is referable to the typical form of Müller's species. [See *J.C.* ii. 4].

Having seen some of the specimens of Mr. Edgar A. Smith's *Limnæa Goodwinii* (*Q. J. C.*, Feb. 1876, i. 125) preserved in the British Museum, he is of opinion that this also is referable to the same variable species.

VERTIGO MOULINSIANA, Dupuy.

The Secretary (Mr. JOHN W. TAYLOR) called the attention of the meeting to a paper in the November number of the *Annals and Mag. Nat. Hist.*, in which Dr. Jeffreys now considers that the shell which he originally referred to *Vertigo Moulinsiana*, Dupuy, ought really to bear the name of *V. Lilljeborgi*, Westerlund; a view which Mr. Taylor held in a paper read at the 41st meeting (25th of August).

PHYSA VIRGATA, Gould.

Mr. WILLIAM NELSON stated that amongst the shells sent by Prof. F. M. Witter, of Muscatine, Iowa, collected in that district, was a specimen of *Physa virgata*, Gould, a species recorded (fide Binney, 1865) as occurring only in California.

SHELLS OF BORDEAUX.

Mr. JOHN W. TAYLOR exhibited on behalf of Mr. ROBERT SCHARFF, of Bordeaux, the following shells collected in the neighbourhood of that city:—

- Helix rotundata*, Müller.
H. aspersa, Müll., also vars. *minor* and *grisea*.
H. nemoralis, L., also vars. *fasciata*, *coalita*, *unicolor* and *minor*.
H. lapicida, L.
H. carthusiana, Müller, and var. *minor*.
H. hortensis, Müller, and var. *unicolor*.
H. terrestris, Fleming, and var. *maculosa*.
H. limbata, Drap., and var. *minor*.
H. pisana, Müller, and var. *albida*.
H. variabilis, Drap., also vars. *fasciata*, *hypozona*, *lutescens*, *tessellata* and *ochroleuca*.
H. cornea, Drap., and var. *squamatina*.
H. acuta, Müller, and var. *strigata*.
H. incarnata, Müller, and var. *pallidula*.
Cyclostoma elegans, Drap., also vars. *violaceum*, *ochroleucum*, *pallidum* and *albescens*.
Bulimus decollatus, Drap.
Helix intersecta, Poir.
Limnæa stagnalis, Lam., and var. *fragilis*.
L. peregra, Lam., var. *cornea*.
L. palustris, Flem.
L. truncatula, Beck. (*fossaria*, Flem.)
L. glabra, Müller.
Planorbis corneus, Poir.
P. vortex, Müller.
P. complanatus, Studer, var. *submarginatus*.
P. leucostoma, Mill., and var. *Perezii*.
P. carinatus, Müller.
P. nitidus, Müller.
P. contortus, Müller.
P. albus, Müller.
P. nautilus, Flem.
Valvata cristata, Müller.
Physa acuta, Drap.
Unio Requieni, Michaud.
U. sinuatus, Poir.
U. danielis, Ganier.
U. littoralis, Cuvier.
Anodonta piscinalis, Nilsson.
A. cygnea, L., var. *cellensis*.
Bithinia ventricosa, Gray.

SUCCINEA OREGONENSIS, Gould, AND S. OBLONGA, Drap.

Mr. JOHN W. TAYLOR exhibited specimens of the former from Alameda County, California, and of the latter from the Co. Cork, Ireland, and showed that the two forms were identical.

44th Meeting—April 3rd, 1879.

Mr. Benjamin Holgate, F.G.S., in the chair.

DONATIONS TO THE LIBRARY.

The following were announced and thanks voted to the donor:—

Bulletin of the Museum of Comparative Zoology, vol. v.,
Nos. 8 and 9. [Dr. Alex. Agassiz.

FRENCH CONCHOLOGY.

Mr. TAYLOR read extracts from letters addressed to him by Mr. Robert Scharff of Bordeaux, giving accounts of various interesting conchological rambles at Carcassonne, Nîmes, Marseilles and Avignon, many interesting shells being collected.

45th Meeting—May 1st, 1879.

Mr. W. Denison Roebuck in the chair.

DONATIONS TO THE LIBRARY.

The following were announced and thanks voted to the donors:—

Label List of the genus *Nassa*, by F. P. Marrat.

[The Compiler.

Leeds Geological Association: an address delivered Oct. 28,
1878, by Mr. Benj. Holgate, F.G.S. [The Society.

On the Variation of Sculpture exhibited in the shells of the
genus *Nassa*, by F. P. Marrat. [The Author.

YORKSHIRE SHELLS.

A large number of shells collected in different parts of Yorkshire were exhibited by the members present, and the localities entered in the Record Books for that county.

SHELLS EXHIBITED.

Mr. JOHN W. TAYLOR showed a number of shells he had received from Mr. Charles Ashford, including:—

Helix ericetorum, var. *albida*, from Clara, King's Co., Ireland.

H. ericetorum, the ordinary form of that district, also peculiar.

Clausilia livida, Sicily (Benoit).

Succinea Vermeta, U.S.A.

Ancylus capuloides, (Jan) Sicily (Benoit),

Also *Hypselostoma tubiferum*, from Aracan.



VALVATA CRISTATA IN THE VALE OF YORK.

By W. NELSON.

This spring, whilst collecting in the neighborhood of South Milford, I found a single specimen of this shell. On Whit Monday, collecting near Selby, I found a number of this species amongst decaying vegetation. In the same locality *Bythinia Leachii* was very abundant, along with a number of other commoner species.



CLAUSILIA RUGOSA var. *ALBIDA* AT SMEATON, YORKSHIRE.

By W. NELSON.

In the spring of 1878, during the excursion of the Yorkshire Naturalists' Union, whilst searching among a heap of loose stones for *Clausilia laminata*, which was plentiful in this locality, I found two specimens of *Clausilia rugosa* var. *albida*. The type of this species was somewhat rare; the only other species associated with it being *Zonites fulvus* and *Vertigo pygmæa*.



LIST OF MARINE SHELLS COLLECTED ON FITZROY
ISLAND, NORTH COAST OF AUSTRALIA;
WITH NOTES ON THEIR GEOGRAPHICAL RANGE.*

By JOHN BRAZIER, C.M.Z.S.,

*Fellow of the Royal and Linnean Societies of New South Wales, Corr. Mem.
Roy. Soc. Tasmania.*

The whole of these species were collected during a few hours' stay in the year 1871, and only obtained on the west side. The beach was composed of nothing but coral and shells, about 30 yards long, 6 to 7 feet in thickness, and the same in breadth. During my second visit the whole of the bank had been washed away by some heavy gale; the large flat blocks of coral conglomerate that were at the edge of ebb tide had also been carried out into deep water, nothing left but a fine clear white sand beach.

1. **Pleurotoma bijubata** Reeve. Conch. Icon., i., f. 87 (very bad).

One fine specimen obtained; I have also found it at San Christoval, Solomon Islands; Lifou, Loyalty Islands.

2. **Pleurotoma** sp.?

Dead and worn specimen of a light pink color.

3. **Ranella gyrinus**.

Murex gyrinus, L. Gmel., p. 3531.

One specimen in good condition. Found on the reefs at Darnley Island, Torres Straits; New Caledonia and Fiji Ids.

4. **R. granifera** Lam. Enc. Méth., pl. cccxiv., fig. 4.

One fair specimen obtained. Some years back I obtained a broken specimen washed on shore after a south-east gale north of the Macleay River, New South Wales; also on the reefs at Aneiteum, New Hebrides, South Pacific Ocean.

* List of Land Shells found on Fitzroy Island—see *Quarterly Journal of Conchology*, November, 1877, vol. i., p. 268.

5. **Nassa albescens.**

Buccinum albescens, Dunker, Abbild. und Besch., 1849, p. 58, pl. ii., f. 15.

Nassa bicolor, Homb. et Jacq., Voy. au Pol. Sud., p. 84, pl. xxi., fig. 41, 42.

One fine specimen obtained. Also at Darnley Island, Torres Straits, 5 fathoms, sand bottom.

6. **Nassa sp.?**

One sea-worn specimen.

7. **Purpura mancinella.**

Murex mancinella, L. Syst. Nat., ed. xii., p. 1219.

One small specimen obtained. Found at Darnley Island, Torres Straits, on the reefs under coral; Nickol Bay, North West Coast of Australia; Port Darwin, North Australia, (Mr. William Tompson Bednall).

8. **Persternia incarnata.**

Turbinella incarnata, Desh. Lam. Anim. Sans. Vert., tome ix., p. 394.

One specimen found in good condition. Also Port Darwin, N. Australia. Specimens from San Christoval, Solomon Islands are of a bright yellow, violet inside.

9. **Voluta maculata** Swainson, Exot. Conch., p. 23, pl. xxxviii.

One inferior specimen obtained. Splendid specimens obtained in 1875, at Palm Island, North-east Australia; also Port Curtis and Port Denison.

10. **Mitra limbifera** Lam. Anim. Sans. Vert., ed. ii., tome x., p. 329.

One fine living specimen obtained.

11. **M. avenacea** Reeve.

One sea-worn specimen found.

12. **M. fraga**, Quoy et Gaimard. Voy. de l'Astr., tome ii., p. 660, pl. xlv., f. 28, 29.

Mitra peregra, Reeve, Conch. Icon., pl. xxiv., sp. 186.

Six living specimens obtained under coral. Palm Island, Northeast Australia; Darnley Island, Torres Straits; Philippines (Cuming).

13. **M. leuodesma** Reeve.

One specimen found; Ticao, Philippines (Cuming).

14. **M. porphyritica** Reeve, Conch. Icon., pl. xxv., f. 195.

One specimen found. Ticao, Philippines (Cuming). Society Islands, on the authority of Mr. G. B. Sowerby in Thes. Conch.

15. **Imbricaria conica** Schumacher, Syst., p. 236, pl. xxi., f. 5.

Mitra conica, Deshayes.

Mitra marmorata, Quoy et Gaimard.

Mitra marmorata, Kiener.

Mitre décorée Blainville.

Mitra marmorata, Schub. et Wagn.

Conelix marmoratus, Swainson.

Mitra marmorata, Reeve.

Mitra conica, Reeve.

Conohelix conicus, Chenu.

Conohelix, Swainson.

Conohelix, Sowerby.

One living specimen found. I have also found it at Low Island, Trinity Bay, North-east Australia; Pango Pango Harbour, Navigators Islands; Anse Vata, near Nouméa, New Caledonia. This well-known species enjoys a variety of both specific and generic names.

16. **Columbella semipunctata**.

Colombella punctata, Lam. Anim. Sans. Vert., tome vii., p. 294.

Three specimens found on the beach in good condition.

17. **Columbella plicaria** Montrouzier. Journal de Conch., 1862, vol. x., 3rd. series, p. 234, pl. ix., f. 3.

One specimen in splendid condition found on the beach. Island of Art, North Coast of New Caledonia (Montrouzier) I obtained at Artillery Point, Nouméa, New Caledonia, in 1865, one fine living specimen under a stone in deep water. Also at Bird Island off the Northeast Coast of Australia.

18. **C. Digglesi.**

C. (Anachis) Digglesi, Brazier. Proc. Zool. Soc., 1874, p. 671, pl. lxxxiii., f. 11, 12.

One living specimen was dredged by me in 18 fathoms, and the type in my collection. During my New Guinea cruise, in 1875, I dredged specimens at Darnley Island, Torres Straits, 20—30 fathoms, white sandy bottom; Katow, New Guinea, 7 fathoms, sandy mud bottom.

19. **C. regulus.**

C. pumila, Souverbie. Journal de Conch., 1862, vol. xi., p. 281, pl. xii., f. 14, not *C. pumila*, Dunker.

C. regulus, Souverbie. Journal de Conch., 1863, vol. xii., p. 41.

Six specimens found under stones and coral. Also No. VI., or Eclipse Island, off Cape Sidmouth, Northeast Australia; during my cruise in 1875 I obtained it on the Great or Northern Palm Island; Barnard Islands, No. III.; Home Islands, off Cape Grenville, Northeast Australia; in 1872 I obtained four specimens at Makera Harbour, San Christoval, Solomon Islands; and in 1873 I obtained a great number of specimens at Artillery Point and Anse Vata, near Nouméa, New Caledonia.

20. **Engina lineata.**

Ricinuia lineata, Reeve. Conch. Icon., pl. vi., sp. 51.

Three specimens obtained. Seven found in 1875 at Barnard Islands No. III.

21. *Engina* sp.?

One single sea-worn specimen; resembles *E. recurva*.

22. *Natica melanostomoides* Quoy and Gaimard. Voy de l'Astr., tome ii., p. 229, pl. lxvi., f. 4.

One fine specimen obtained. I dredged two specimens in 1875 at Cape Grenville, Northeast Australia, 30 fathoms, white sand bottom; they are in the Macleayan Museum. Elizabeth Bay, Sydney.

23. *Conus arenatus* Brug. Dict., No. 16.

One specimen found. Common in the Solomon Islands; New Britain; New Ireland and Duke of York Group; rare in New Caledonia and Loyalty Islands.

24. *C. varius* L. Syst. Nat., No. 312.

Six specimens found; some are coronated and some smooth.

25. *C. minimus* L. Syst. Nat., ed. xii., p. 1168.

One specimen found. Also New Caledonia, common.

26. *C. Ceylanensis* Brug. Sowerby, Thes. Conch., p. 10, f. 139—140.

Eight specimens found. Also north of New Caledonia, Makera Harbour, San Christoval, Solomon Islands.

27. *C. musicus* Brug. Sowerby, Thes. Conch., p. 11, pl. vi., f. 148.

Five specimens found. Darnley Island, Torres Straits, found on the reefs under coral; Art Island, New Caledonia, Makera Harbour, San Christoval, Solomon Islands, found under stones.

28. *C. emaciatius* Reeve. Sowerby, Thes. Conch., p. 23, pl. x., f. 214.

One specimen found (white variety). Common on the North Coast of New Caledonia, Lifou and Maré, Loyalty Islands.

29. **C. sugullatus** Reeve. Sowerby, Thes. Conch., p. 4, pl. iii., f. 50.

One fine specimen found. Also at Fiji in 1865; Pouébo, New Caledonia; Makera Harbour, San Christoval, Solomon Islands.

30. **C. eximius** Reeve. Sowerby, Thes. Conch., p. 18, pl. ix., f. 202.

Two specimens found. It is also found at Bird Island; and Wreck Reefs near the Tropic of Capricorn.

31. **C. capitaneus** L. Sowerby, Thes. Conch., p. 27, pl. viii., f. 175—176.

Large quantity obtained washed up on coral bank. Darnley Island, Torres Straits; Hall Sound, New Guinea; New Caledonia; Lifou and Maré, Loyalty Islands; Fiji Islands; New Ireland; New Britain; Duke of York Group; Solomon Islands.

32. **C. magus** L. Sowerby, Thes. Conch., pl. xxi., figs. 508—514 and 525.

The commonest species, found in all varieties. It also enjoys a vast number of specific names, such as *Conus indicus*, Chem., *C. clandestinus*, Chem., *C. circe*, Chem., *C. fenellus*, Chem., *C. raphanus*, Hwass., *C. carinatus*, Swainson, *C. ustulatus*, Reeve, *C. epistomium*, Reeve, *C. epistomioides*, Weinkauff, *C. striolatus*, Kiener, *C. Borneensis*, Sowerby (not Ad. & Reeve), *C. Frauenfeldi*, Crosse, *C. assimilis*, A. Ad., *C. consul*, Boivin.

Found also at Darnley Island, Torres Straits; Strong Island, Ponope, Caroline Group; Makera Harbour, San Christoval, Solomon Islands; rare in New Caledonia.

33. **C. lineatus** Chem. Sowerby, Thes. Conch., p. 36, pl. x., f. 219.

Only one specimen found. Isle of Art, New Caledonia; Lifou and Mare, Loyalty Islands; New Ireland; New Britain; and Duke of York Group.

34. **C. vitulinus** Brug. Sowerby, Thes. Conch., p. 36, pl. x., f. 223.

Eight specimens found, somewhat sea-worn. Island of Art, New Caledonia; Lifou and Maré, Loyalty Islands; New Ireland, New Britain and Duke of York Group.

35. **C. striatus** L. Sowerby, Thes. Conch., p. 39, pl. xxiii., f. 557.

Three specimens found. Darnley Island, Torres Straits, very common; New Ireland, New Britain and Duke of York Group; Isle of Art, New Caledonia; Lifou and Maré, Loyalty Islands.

36. **C. stercus-muscarum** L. Sowerby, Thes. Conch., p. 38, pl. xv., f. 347.

Only one specimen found in good condition. New Ireland, New Britain and Duke of York Group; Ontong Java or Lord Howe Group.

37. **C. textile** L. Sowerby, Thes. Conch., p. 41, pl. xxiii., f. 567.

Very common on shore after gale of wind. Island of Art, New Caledonia, very common; Darnley Island, Torres Straits; Low Islands, Trinity Bay, Northeast Australia; Lifou and Maré, Loyalty Islands; New Britain, New Ireland, and Duke of York Group; Solomon Islands.

38. **C. nussatellata** L. Sowerby, Thes. Conch., p. 45, pl. xxiii., f. 553. *Conus terebra*, Chem.

One specimen found three inches long. Brooke Island, Northeast Australia; Isle of Pines, New Caledonia; Lifou and Maré, Loyalty Islands; New Britain, New Ireland and Duke of York Group; Solomon Islands.

39. **C. glans** Brug. Sowerby, Thes. Conch., p. 46, pl. xxii., f. 530—531.

Common on the beach after a gale. Isle of Art and Anse Vata, New Caledonia; New Ireland; New Britain, and Duke of York Group; Solomon Islands.

40. **C. coccineus** Gmel. Sowerby, Thes. Conch., p. 45, pl. xxii., f. 538.

One fine specimen found. Isle of Art, New Caledonia; Lifou and Maré, Loyalty Islands; New Britain.

41. **C. scabriusculus** Chem. Sowerby, Thes. Conch., p. 46, f. 542—543. *Conus fabula*, Sowerby.

Common on the beach after a gale. Isle of Art, New Caledonia; Lifou and Maré, Loyalty Islands.

42. **C. tenellus** Chem. Sowerby, Thes. Conch., p. 45, pl. xxiii., f. 556.

C. artopus, Sowerby. *C. spectabilis*, A. Adams.

Only one specimen of this rare species found.

43. **Strombus plicatus** Lam. Sowerby, Thes. Conch., p. 30, pl. vii., f. 56.

Three specimens found. Also Great North Palm Island, Northeast Australia; Home Islands, off Cape Grenville, Northeast Australia; found on the reefs; Darnley Island, Torres Straits, on mud flats inside the reefs; also dredged at 20 and 30 fathoms, sandy-mud bottom.

44. **Conus elegans** Sow. Thes. Conch., p. 3, pl. vi., f. 43-48.

Two sea-worn specimens obtained. Darnley Island, Torres Straits, 15, 20 and 30 fathoms, sandy mud floor.

45. **Cypræa tigris** L. Reeve, Conch. Icon., pl. iv., f. 12.

Common on the beach after a gale. Darnley Island, Torres Straits. I obtained on the reef at Ovalau, Fiji Islands, in 1865, a splendid orange variety, and in 1872 I obtained

at Port Hunter, Duke of York Group, one fine specimen having the whole surface light blue; margins nearly jet black.

46. **C. arabica** L. Reeve, Conch. Icon., pl. i., f. 2.

Common on the beach after a gale. Home and Low Islands, Northeast Australia; Darnley Island, Torres Straits; Fiji Islands; New Britain; New Ireland; New Caledonia; Duke of York Group; and Solomon Islands. Fine large specimens obtained at the mouth of the Bellenger River, New South Wales. Also as far south as Botany Bay, near Cape Banks, I obtained under stones at half tide twelve years ago fifty specimens in a young state or volute-like form. Cape Banks is in 34° 0' South Latitude and 151° 16' East Longitude.

47. **C. asellus** L. Reeve, Conch. Icon., pl. xviii., f. 98.

One specimen found on the beach. Darnley Island, Torres Straits, found on the reefs under stones. Fiji Islands; Tongataboo, Friendly Islands; Niué or Savage Island; New Britain; New Ireland; Duke of York Group; New Caledonia; Loyalty Islands; Bellenger River, New South Wales; Solomon Islands; Cape Banks, Botany Bay, New South Wales. One large living specimen found with *C. Arabica*.

48. **C. erroneus** L. Reeve, Conch. Icon., pl. xiii., f. 56.

Common on the beach. Darnley Island, Torres Straits; Bellenger River, Cape Banks, Botany Bay, New South Wales; New Caledonia; New Britain; New Ireland; Loyalty Islands; Fiji Islands; Tongataboo, Friendly Islands.

49. **C. flaveola** L. Reeve, Conch. Icon., pl. xviii., f. 95.

One specimen found on the beach. Bellenger River; Redbank River; Lake Macquarie, New South Wales.

50. **C. fimbriata** Gmel. Sowerby, Thes. Conch., pl. xxxii., f. 390—1.

One specimen, slightly sea-worn. Also Western Australia.

51. **C. stercus-muscarum** Lam. Sowerby, Thes. Conch., pl. xxxii., 364—5.

One living specimen found. Bird Island.

52. **Trivia oryza** Lam. Sowerby, Thes. Conch., pl. xxxv., f. 474—6.

One living specimen found. New Caledonia. I dredged specimens off Cape Grenville, Northeast Australia, 20 fathoms, sand floor.

53. **T. vitrea** Gaskoin. Sowerby, Thes. Conch., pl. xxxv., f. 456—7.

One specimen found, in good preservation. Darnley Island, Torres Straits, 25 fathoms, sandy-mud floor.

54. **Pustularia staphylæa**.

Cypræa staphylæa L. Sowerby, Thes. Conch., pl. xxv., f. 227—9.

The specimen obtained is pure white. Other varieties come from Solomon Islands; New Ireland; New Britain; New Caledonia; Shark Point, Port Jackson, New South Wales, 7 fathoms, mud bottom. This species must not be confounded with *Cypræa limacina* Lamarck.

55. **Cerithium Novæ-Hollandiæ** A. Adams. Sowerby, Thes. Conch., pl. clxxviii., f. 54, p. 864.

One specimen found. Common at Mud Bay, Cape York, North Australia, in crevices of dead coral blocks partly covered with mud.

56. **Triphoris violaceus**.

Cerithium violaceum, Quoy. Voy de l'Astrolabe.

Four specimens found under coral. Great North Palm Island, Northeast Australia. Also Home Islands; Barnard Islands, No. III.; Makera Harbour, San Christoval; Solomon Islands; Nouméa, New Caledonia; New Ireland.

57. **Cerithidea Kieneri.**

Cerithium Kieneri Homb. et Jacq. Voy. au Pole Sud.
Moll., Atlas, pl. xxiii., f. 45.

One single specimen found on trunk of *Rhizophora*.
Mud Bay, Cape York, North Australia, rather common,
found on Mangrove or *Rhizophora* some six feet from the
ground. One dead specimen I found on the beach at
Katow, New Guinea.

58. **Melania —sp.**

I collected a large number of specimens, but being in
doubt of the species I have sent it to the British Museum.

59. **Littorina Malaccana** Philippi, Abbild. und Besch. Conch.,
iii., p. 15, pl. vi., f. 17.

Found very common in clusters on the granite boulders
at the north end of the island.

60. **L. melanacme** Smith. Journal of the Linn. Soc., Zoology,
London, xii., p. 552, pl. xxx., f. 21.

Common. Found with the former. The type in the
British Museum I obtained at Makera Harbour, San Chris-
toval, Solomon Islands. Specimens also found on Barrow
Island, Northeast Coast of Australia. New Caledonia, Mr.
R. C. Rossiter.

61. **L. undulata** Gray. Reeve, Conch. Icon., pl. xiii., sp. 67.

Six living specimens found on granite boulders. Common
at Darnley Island, Torres Straits, found on the reefs.

62. **L. obesa** Sowerby. Reeve, Conch. Icon., pl. ix., f. 41.

One single specimen found with the former. Found
very common at Port Vila, Vate or Sandwich Island, New
Hebrides.

63. **Modulus tectum.**

Trochus tectum Gmel. *Monodonta tectum* Lam.

One beach-worn specimen found. Also New Caledonia.

64. **Rissoina sp.?**

One single beach-worn specimen found.

65. **Neritopsis radula.**

Nerita radula L. Syst. Nat., p. 1252, No. 721.

Living specimens found on the beach. Living specimens have been found in New Caledonia with the operculum. My kinsman Mr. R. C. Rossiter obtained a beautiful specimen complete near Nouméa.

66. **Turbo supragranosus.**

Trochus (Gibbula) supragranosus Smith. Journal of the Lin. Soc. London, Zoology, xii., p. 558, plate xxx., f. 15.

One specimen found on the beach. The type specimen was from San Christoval, Solomon Islands, and placed by Mr. Edgar Smith, F.Z.S., in the genus *Trochus*. Since then I have sent another specimen to the British Museum with the operculum, the character of which places it in the family *Turbinidae*.

67. **Trochus hexagonus** Philippi. Reeve, Conch. Icon., pl. xi., f. 61.

One specimen slightly sea-worn was found on the beach.

68. **Clanculus albinus** A. Adams. P. Z. S., 1851, p. 160.

One specimen with the apex broken was found on the beach.

69. **Monodonta labio.**

Trochus labio L. Syst. Nat., ed. xii., p. 1230.

One small living specimen found.

70. **Monilea corrugata.**

Trochus corrugatus Koch. Phil. Abbild., p. 67, pl. 2, f. 7.

Monilea lentiginosa A. Adams. Proc. Zool. Soc., 1851, p. 188.

One specimen found on the beach.

71. *Fissurella octagona*? Reeve. Sowerby, Thes. Conch., pl. viii., f. 159.

One specimen dead and sea-worn found on the beach.

72. *Buccinulus coccinatus*.

Tornatella coccinata Reeve. Proc. Zool. Soc., 1842, p. 60.

Solidula coccinata A. Ad. Proc. Zool. Soc., 1854, p. 61.

One good specimen found on the sands. Harbour of Nouméa, New Caledonia, 8 fathoms, sandy-mud bottom. Only a few weeks ago I obtained six specimens right under the inner North Head of Port Jackson, in 5 fathoms, white sand and broken shells. Whale Island, Aneiteum, New Hebrides, crawling on the sandy-mud flat at the edge of ebb tide.

73. *Bulla punctulata* A. Adams. Sowerby, Thes. Conch., pl. cxxiii., f. 77.

Two specimens found on the beach in good condition. Also New Caledonia; New Britain; Port Jackson and the coast of New South Wales in general.

CONCHIFERA.

74. *Mesodesma intermedia* Deshayes. Proc. Zool. Soc., 1854, p. 338.

One specimen found in a living state.

The *Mesodesma nitida* Desh. is not found at Sydney, nor anything like it. So much for the Cumingian Localities.

75. *Cardium Dupuehense* Reeve. Conch. Icon., pl. xiv., f. 67.

One specimen found somewhat sea-worn.

76. *Mytilus Nicobarica* var. *Kraussii* Kuster. Reeve, Conch. Icon., pl. ix., f. 40.

Three specimens found on a block of coral. Cape Bank, Botany Bay, New South Wales.

77. *Pecten madreporarum* Petit. Sowerby, Thes. Conch., pl. xiv., f. 68.

Three living specimens found on coral.

MISCELLANEOUS NOTES.

UNIVERSITY HONORS.—The University of Cambridge on the 10th of June last honored itself by conferring the honorary degree of LL.D. upon a number of distinguished men, among whom are Prof. Huxley and Mr. H. C. Sorby. The latter gentleman will be best known to our readers through his researches into the coloring matters of the animal of *Planorbis corneus*.

ZOOLOGICAL STATIONS AT SYDNEY AND ABERDEEN.—The establishment of these invaluable adjuncts to the study of the biology and embryology of marine animals is being extended to various parts of the world. We see that on the proposition of Baron Miçlucho-Maclay the Linnean Society of New South Wales has determined to organize one near Sydney, while in the meantime the munificence of Mr. Wm. Macleay has already provided a temporary one there, pending the complete organization of the permanent station. The British Isles is also to be provided in like manner. The locality selected is on the coast of Aberdeenshire, and the station is proposed to be worked in connection with the University of Aberdeen. Should any of our readers wish to encourage financially the latter project they may remit to Mr. G. J. Romanes, of 18, Cornwall Terrace, Regent's Park, London, N.W., who has undertaken to collect subscriptions for this object. We trust that the institutions we have mentioned may be largely productive of information with respect to the developmental history of the mollusca.

BIBLIOGRAPHY.

1875.

TERRESTRIAL AND FLUVIATILE CONCHOLOGY.

Adami (G. Battista).—**Mollusca collected in the Val di Caffaro, Italy.**—Molluschi raccolti in val di Caffaro, nell' Agosto del 1874.—Bull. Soc. Mal. Ital. 1875, i. 93 to 98.

A short preface is followed by a list in which appear 4 *Limax*, 1 *Vitrina*, 1 *Zonites*, 4 *Hyalina*, 13 *Helix*, 2 *Bulimus*, 1 *Zua*, 7 *Pupa*, 1 *Balia*, 4 *Clausilia*, 1 *Succinea*, 1 *Carychium*, 2 *Limnæa*, 1 *Ancylus*, 1 *Acme*, 1 *Pomatias*, 1 *Cyclostoma* and 1 *Pisidium*—altogether 47 species.

Anselmo (Tommasi).—**Catalogue of Land and Fresh-water Mollusca of Castelgoffredo in Italy.**—Catalogo dei Molluschi Terrestri e Fluviatili viventi nel territorio di Castelgoffredo e dintorni facenti parte del Circondario di Castiglione delle Stiviere.—Bull. Soc. Mal. Ital. 1875, i. 166 to 183.

The author enumerates 1 *Vitrina*, 3 *Succinea*, 4 *Zonites*, 24 *Helix*, 2 *Bulimus*, 1 *Zua*, 2 *Cionella*, 3 *Clausilia*, 4 *Pupa*, 5 *Vertigo*, 2 *Carychium*, 7 *Planorbis*, 1 *Segmentina*, 2 *Physa*, 6 *Lymnæa*, 2 *Ancylus*, 1 *Cyclostoma*, 3 *Bythinia*, 2 *Paludina*, 1 *Pyrgula*, 3 *Valvata*, 4 *Neritina*, 7 *Anodonta*, 4 *Unio*, 3 *Pisidium* and 1 *Sphærium*.

Benoit (C. Luigi). **Catalogue of Land and Fluvatile Shells of Sicily and adjacent Islands.**—Catalogo delle Conchiglie terrestri e fluviatili della Sicilia e delle Isole circostanti.—Bull. Soc. Mal. Ital. 1875, i. 129 to 163.

The author enumerates 1 *Testacella*, 5 *Daudebardia*, 2 *Vitrina*, 3 *Succinea*, 93 *Helix* (including *Zonites* and *Hyalina*), 3 *Bulimus*, 17 *Achatina*, 19 *Pupa* (including *Vertigo* and *Balia*), 26 *Clausilia*, 1 *Carychium*, 1 *Acme*, 2 *Cyclostoma*, 7 *Pomatias*, 6 *Limnæa*, 10 *Planorbis*, 9 *Physa*, 10 *Ancylus*, 1 *Valvata*, 9 *Paludina*, 3 *Neritina*, 3 *Unio*, 1 *Cyclas* and 4 *Pisidium*.

Cesati (Vincenzo).—List of Mollusca collected in Naples.

—Molluschi raccolti nel Regio Orto Botanico in Napoli.—
Bull. Soc. Mal. Ital. 1875, i, pp. 125 to 128.

The author observes that the immense variety of conditions necessary in a Botanical Garden conspires to attract a rich molluscan fauna. He enumerates 1 *Limax*, 3 *Hyalina*, 16 *Helix*, 3 *Bulimus*, 3 *Cionella*, 3 *Pupa*, 1 *Clausilia*, 2 *Carychium*, 1 *Limnæa*, 1 *Planorbis*, 1 *Cyclostoma* and 1 *Bithynia*.

Lewis (James, M.D.).—Descriptions of New Species of American Land and Freshwater Shells.—Proc. Ac. Nat. Sci. Philad. 1875, pp. 334 to 337 and plate xxiii.

Helix (Mesodon) Chilhoweensis, Lewis, near *H. Sayii*; *Zonites acerra*, hitherto confounded with *Z. demissus*; *Vitrina latissima*, and *Melantho obesus*. All collected in Eastern Tennessee and Western North Carolina, except *Melantho*, which is from Ohio and Michigan.

Pini (Napoleone).—Description of a New Clausilia—
Species Nuova: *Clausilia Spreafici* Pini.—Bull. Soc. Mal. Ital., 1875, i, pp. 164 and 165.

The locality is in the Val Tellina near Tirano, Italy.

Prete (Dott. Raimondo del).—List of Terrestrial and Fluvial Shells found at Viareggio, Massarosa and Camaione.—Nota di alcune conchiglie raccolte nei comuni di Viareggio, Massarosa e Camaione. — Bull. Soc. Mal. Ital. 1875, i, pp. 25 to 31.

Seventy-five species are enumerated, viz., 1 *Succinea*, 3 *Hyalina*, 24 *Helix*, 6 *Bulimus* (including *Cochlicopa*), 2 *Cæcilianella*, 5 *Clausilia*, 4 *Pupa*, 1 *Vertigo*, 1 *Carychium*, 6 *Planorbis*, 1 *Physa*, 5 *Limnæa*, 1 *Ancylus*, 1 *Velletia*, 1 *Cyclostoma*, 1 *Pomatias*, 3 *Bythinia*, 1 *Paludina*, 2 *Valvata*, 1 *Neritina*, 1 *Anodonta*, 1 *Unio*, 1 *Pisidium* and 1 *Cyclas*.

Stefani (Carlo de).—Recent Mollusca of the Upper Serchio Valley.—Molluschi viventi nella valle del Serchio superiore &c.—Bull. Soc. Mal. Ital. 1875, i. pp. 35 to 67.

An elaborate paper, with introductory remarks on distribution, &c., followed by a list of 45 terrestrial and 12 fluviatile mollusca. A tabulation of their distribution is given, and a list of 15 excluded species. At p. 63 a new species of *Bythinia* is described but not named. Signor Stefani names 1 *Arion*, 1 *Limax*, 1 *Testacella*, 4 *Zonites*, 19 *Helix*, 4 *Bulimus*, 1 *Achatina*, 6 *Pupa*, 1 *Vertigo*, 5 *Clausilia*, 1 *Succinea*, 3 *Limnæa*, 1 *Planorbis*, 1 *Ancylus*, 1 *Acme*, 1 *Cyclostoma*, 2 *Pomatias*, 2 *Bythinia* and 1 *Pisidium*. The excluded species are of the genera *Zonites* (1), *Helix* (7), *Clausilia* (1), *Succinea* (1), *Ancylus* (3), *Pomatias* (1), and *Bythinia* (1).

Strebel (H.).—The Mexican Land and Freshwater Fauna.

—Beitrag zur Kenntniss der Fauna Mexicanischer Land- und Susswasser-Conchylien: Zweiter Theil, 51 pp. and 15 plates, gr. 4to.: published 1875 by T. Friedrichsen & Co., Hamburg: Price 12 marks.

Noticed in the *Jahrbücher*, April 1876, iii. 185 to 189, by Dr. E. von Martens.

Woods (Rev. J. E. Tenison).—On the Freshwater Shells of Tasmania.—Proc. Roy. Soc. Tasmania, August 9, 1875, pp. 66 to 82.

Mr. Woods' experience leads him to remark that the fresh-water fauna of Tasmania is perfectly distinct from that of Australia; and that the facies or general character of the freshwater shells is not Australian, showing the remoteness of the period at which the two islands were separated. Another remarkable fact is mentioned by Mr. Woods, namely, that the commonest *Physa* seems scarcely distinguishable from the European *P. fontinalis*, and it is found in places which preclude the supposition of having been introduced. Nevertheless he describes the shell as new under the name of *P. tasmanica*. There are in all 32 species (28 being univalves) of known freshwater shells in Tasmania, viz.:—

Ancylus Cumingianus Bourg., *A. Tasmanicus*, n. sp. (p. 70), *Limnæa Tasmanica*, n. sp. (p. 70), *L. Huonensis*, n. sp. (p. 71), *L. Hobarttonensis*, n. sp. (p. 71), *L. Launcestonensis*, n. sp. (p. 71), *Physa aperta* Sow., *P. eburnea* Sow., *P. mamillata* Sow., *P. nitida* Sow., *P. Brunienensis* Sow., *P. Vandiemensis* Sow., *P. Huonensis* n. sp. (p. 74), *P. Legrandi*, n. sp. (p. 74), *P. Tasmanica*, n. sp. (p. 74), *P. ciliata*, n. sp. (p. 75), *P. Tasmanicola*, n. sp. (p. 75), *P. Huonicola*, n. sp. (p. 75), *Bythinia Legrandi*, n. sp. (p. 76), *B. Pontvillensis*, n. sp. (p. 76), *B. Dulvertonensis*, n. sp. (p. 77), *B. Huonensis*, n. sp. (p. 77), *B. unicarinata*, n. sp. (p. 77), *B. Dunrobinensis*, n. sp. (p. 77), *B. Tasmanica*, n. sp. (p. 77), *Pomatiopsis striatula* Menke, *Assimineæ Tasmanica*, n. sp. (p. 79), *Planorbis Tasmanicus*, n. sp. (p. 79), *Paludestrina Legrandiana* Brazier, *P. Wisemaniana* Brazier, *Unio Moretonicus* Sow., *Pisidium Tasmanicum*, n. sp. (p. 81), *P. Dulvertonensis* n. sp. (p. 82) and *Cyclas Tasmanica* n. sp. (p. 82).

We have seen examples of *Limnæa Hobarttonensis* and regard it as identical with the British *L. peregra*. Mr. Petterd's article on Tasmanian Freshwater Shells in the present volume of this journal should be referred to for further information.

MARINE CONCHOLOGY.

Monterosato (Marchese di).—**Mediterranean Conchology.**—Note intorno ad alcuni articoli di Conchiologia Mediterranea pubblicati nel Jahrbücher der deutschen malakozoologische Gesellschaft dal Sig. H. C. Weinkauff e dal Dott. Kobelt.—Bull. Soc. Mal. Ital. 1875, i. 68 to 73.

The remarks of Dr. Kobelt on *Coralliophila Meyendorffii*, *Mathilda quadricarinata*, *Mitra zonata* and *Buccinum fusiforme*, are paraphrased. A short abstract of Weinkauff's article on a little group of *Pleurotomæ* named *Raphitoma*, and 5 species are named as having been described and figured by him.

Pidgeon (D.).—**Notes on the Marine Conchology of Torbay, with list of species collected 1874-6.**—A Reprint from the Trans. Devonshire Assoc. for the Advancement of Science, Literature and Art, 1875, 8vo., pp. 22.

The author enumerates 209 species, of which 121 are Gastropods and 88 Conchifera, while the Brachiopods do not appear to have come under his notice.

Woods (Rev. J. E. Tenison).—**On some New Species of Tasmanian Marine Shells.**—Proc. Roy. Soc. Tasmania, April 13, 1875, pp. 27 to 29.

These species are eight in number, obtained by dredging operations conducted by the Rev. H. D. Atkinson, in Long Bay, D'Entrecasteaux Channel. The names are: *Cardita Atkinsoni*, *Neera Tasmanica*, *Marginella minutissima*, *M. Allporti*, *M. Tasmanica*, *Triforis Tasmanica*, *Odontostoma Tasmanica* and *Eulima Tasmanica*.

Woods (Rev. J. E. Tenison).—**Description of New Tasmanian Shells.**—Proc. Roy. Soc. Tasmania, Nov. 1875, pp. 134 to 162: also pp. 92 and 93.

The present paper is limited to univalves. In introducing the paper the author pays a just tribute to the labors of Mr.

Legrand, and gives his views as to the limitations of the sub-provinces of the Australian region and reviews the work of previous investigators. The new species are : *Pisania Tasmanica* (D'Entrecasteaux Channel), *Purpura littorinoides* (Long Bay), *Trophon umbilicatus* (East Coast), *T. clathratus* (Bass Straits), *T. Brazieri* (Long Bay), *T. Goldsteini* (Long Bay), *T. australis* (Long Bay), *Fusus Spiceri* (King's Island), *F. Legrandi* (East Coast), *Siphonalia turrita* (Long Bay), *S. Clarkei* (D'Entrecasteaux Channel), *Cominella Tasmanica* (Long Bay) *Cerithiopsis Atkinsoni* (Long Bay), *Conus Tasmanicus*, *Mitra Tasmanica* (Tasmania), *M. scalariformis* (Long Bay), *M. Legrandi* (King's Island), *M. teresiae* (King's Island), *M. scita* (King's Island), *Mangelia Atkinsoni* (East Coast), *Clathurella philomena* (East Coast), *Mangelia immaculata* (King's Island), *M. Meredithiae* (Bass Straits), *Drillia Atkinsoni* (Long Bay), *Turritella granulifera* (Port Arthur), *T. acuta* (Long Bay), *Truncatella Tasmanica* (Bass Straits), *Tenagodus Weldii* (East Coast), *Eulima micans* (Long Bay), *Turbonilla Mariae* (King's Island), *T. Tasmanica* (King's Island), *Cithara Tasmanica* (East Coast), *Syrnola bifasciata* (Long Bay), *Rissoina Gertrudis* (King's Island), *R. (Setia) Brazieri* (Isthmus Bay, Bruni Island), *Cingulina australis* (Badger Island), *Dunkeria fasciata* (Bass Straits), *Rissoa (Cingula) Mariae* (King's Island), *Diala tumida* (Swansea), *D. tessellata* (Tasmania), *D. punctata* (D'Entrecasteaux Channel), *Littorina hisseyiana*, *Natica Tasmanica* (E., S.E. and S. Coasts), *N. nana* (Long Bay), *Ruma globosa* (East Coast), *Fossarina Simsoni*, (Long Bay, Bruni Island), *Nassa Tasmanica* (North and East Coasts), *Cancellaria Tasmanica* (King's Island), *Crossea labiata* (Long Bay), *Columbella badia* (Swansea, East Coast), *C. Roblini* (East Coast, Storm Bay, &c.), *C. Legrandi* (King's Island), *C. minuta* (Swansea, East Coast), *Euchelus Tasmanicus* (Long Bay, Bruni Island and S. Coast), *Gibbula aurea* (King's Island), *Cantharidea ornata* (North Coast), *Liotia tasmanica* (Long Bay), *Monilea rosea*, *Gibbula depressa* (Adventure Bay), *Zizyphinus Legrandi* (Chappell Island, Bass' Straits), *Z.*

Allporti (Islands in Bass' Straits), *Clanculus Aloysii*, *C. philomenæ*, *Cylichna Atkinsoni* (Long Bay), *Aplysia Tasmanica*, *Acmaea marmorata*, *Patella Tasmanica* (Recherche Bay and South generally), *P. Chapmani*, *Macroschisma Tasmanica* (Tasmanian Coasts), *Auricula (Rhodostoma) Dyeriana* (North Coast), *Pecten Mariæ* (East Coast and Maria Island), *Dosinia immaculata* (East Coast), *Callista Victoriæ* (Cloudy Bay, South of Bruni Island), *Venerupis reticulata* (South Coast), *Myodora Tasmanica* (Long Bay), *M. albida* (Long Bay), *Anapa Tasmanica*, *Pinna Tasmanica* (North Coast), *Mytilicardia Tasmanica* (Blackman's Bay), *Mytilus Tasmanicus* (Storm Bay), *Pythina Tasmanica* (King's Island), *Tellina Mariæ* (South Coast), and *Lucina minima* (Badger Island).

—:O:—

PALÆONTOLOGY.

Bellardi (Prof. Aloysio).—**A New Arrangement of the Fossil Pleurotomidæ of Piedmont and Liguria.**—*Novæ Pleurotomidarum Pedemontii et Liguriæ fossilium Dispositionis Prodrömus.*—B. S. M. Ital. 1875, i. pp. 16 to 34.

Conrad (T. A.)—**Descriptions of a New Fossil Shell from Peru.**—*Proc. Acad. Nat. Sci. Philad.* 1875, p. 136 and plate xxii.

Ostrea callacta; a species of *Acicula*? is also figured.

Lawley (Roberto).—**Notes on Fossil Shells of the Lebiaia Valley.**—*Nota di Conchiglie Fossili di Vallebiaia.*—*Bull. Soc. Mal. Ital.* 1875, i. pp. 32 to 34.

Six species of bivalves and 16 of univalves noticed.

Marcou (Jules).—**On the Terebratula Mormonii.**—*Trans. Acad. Sci. St. Louis*, vol. iii (pub. 1875), pp. 252 to 255.

The shell having also been described by Dr. B. F. Shumard as *Retzia punctulifera* in 1858 (the date also of Marcou's name, the latter however having priority) Mr. Marcou maintains the precedence of his name over Shumard's by nearly 4 months.

Seguenza (Prof. G.)—Palæontological Studies of the Malacological Fauna of the pliocene sediments deposited at great depths.—Studi paleontologici sulla fauna malacologica dei sedimenti pliocenici depositatisi a grandi profondità.—Bull. Soc. Mal. Ital. 1875, i. pp. 99 to 124.

After a general introduction the author discusses the pliocene formations, their limits and their partition; then of their deposition in deep water; the deep-sea pliocene is next compared with the littoral pliocene; and the paper concludes with an extended bibliography of the subject.

Stearns (R. E. C.)—Descriptions of New Fossil Shells from the Tertiary of California.—Proc. Acad. Nat. Sci. Philad. 1875, pp. 463, 464 and plate xxvii.

Opalia varicostata and *O. anomala* are the new species described.

Stefani (Carlo de).—New Pliocene Mollusca from Tuscany.—Descrizione delle nuove specie di Molluschi pliocenici raccolte nei dintorni di San Miniato al Tedesco.—Bull. Soc. Mal. Ital. 1875, i. pp. 74 to 79 and plate.

Venus Amidei Meneghini, *Cytherea subappenninica* Meneghini, *Melampus Serresi* Tournouër, and *Rissoa Meneghiniana* De Stefani, are described and figured.

Stefani (Carlo de). — New Italian Pliocene Mollusca.—Descrizione di nuove specie di Molluschi pliocenici Italiani.—Bull. Soc. Mal. Ital. 1875, i. pp. 80 to 88 and plates.

Murex Soldanii Meneghini, *M. dumosus* De Stefani, *Chemnitzia varicosa* De Stefani, *Scalaria fenestrata* Meneghini, *Pleurotoma Angelonii* Meneghini, *P. D'Anconæ* De Stefani, *P. Cocconii* De Stefani, *Rissoina Volaterrana* De Stefani, *Trochus tricinctus* De Stefani, and *Arca lineolata* De Stefani, are described and figured.

Woods (Rev. J. E. Tenison, F.L.S., F.G.S.)—**On some Tertiary Fossils from Table Cape.**—Proc. Roy. Soc. Tasmania, March 9, 1875, pp. 13 to 26.

After a few words on the chief deposits of tertiary age in Southern Australia and Northern Tasmania, is given a somewhat lengthy list of species found; followed by a discussion of various theories as to the formation of the Tertiary deposits. The paper concludes with diagnoses of the following new species:—*Terebra simplex*, *Typhis M'Coyi*, *Fusus Roblini*, *F. gracillimus*, *Natica Wintlei*, *N. polita*, *Cypræa Archeri*, *Triton Abbotti*, *Crassatella aphrodina*, *Voluta Weldii*, *Lyonsia Agnewi*, *Solecurtus Legrandi*, *Cypræa oblonga* and *Venus Allporti*.

—:O:—

MISCELLANEA.

Italian Malacological Society—Statutes and President's Opening Address.—Statuto della Società Malacologica Italiana—Discorso di Apertura della Società Malacologica Italiana letto nella Adunanza del 29 Novembre 1874, dal Presidente Professore **Guiseppe Meneghini**.—Bull. Soc. Mal. Ital. 1875, i. pp. 7 to 15.

It is with pleasure that we notice the existence of a Malacological Society in Italy. In his opening remarks Signor Meneghini reviews the origin of the Society and the history of such journals as have been founded in Italy for the advancement of the science, and cites the names of many distinguished malacologists of Italian birth, or foreigners who have contributed to work out the Italian fauna. He then points out the many varieties of soil, altitude, climate and station possessed by the Peninsula, and dilates on the biological and palæontological problems to be solved by the malacologist. By the statutes it appears that the annual subscription of the members is fixed at 15 lire (about 12/- English).

Manzoni (Dottore A.)—A Proposal of Oyster-culture.—

Una proposta di ostreocultura.—Bull. Soc. Mal. Ital. 1875, i. pp. 89 to 92.

A proposal to establish oyster culture at certain points on the Italian coast.

Troschel (F. H.)—The Teeth of Snails.—Das Gebiss der Schnecken.—Zweiten Bandes; Vierte Abtheilung.—Four plates, Berlin 1875.*HELIX LAMELLATA* JEFFREYS NEAR REDCAR.

By C. ASHFORD.

Whilst searching for shells on 30th April in Wilton Wood I found three individuals of this exquisite little shell beneath damp dead leaves among the hyacinths and woodrush which abound there. Associated with it were most of the smaller *Zonites* and *Helix rotundata*. Wilton Wood is four miles south of Redcar, on the northern slope of the most northern outliers of the Cleveland Hills.

LAND SHELLS COLLECTED AT PUERTO PLATA, SAN DOMINGO.

By J. S. GIBBONS, M.B.

The following, obtained in the immediate vicinity of Puerto Plata during a two or three hours' search, will give some indication of the great richness of this part of the island. I am indebted to Mr. Bland for the names of some of the species. *Helix subaquila* Sh., *H. loxodon* Pfr., *H. cornu-militare* L., *H. indistincta* Fér., *Stenogyra micra* D'Orb., *S. octonoides* Ad., *S. octona* Chem., *Spiraxis Dunkeri* Pfr., *Glandina solidula* Pfr., *Pupa fallax* Say, *Succinea Sagra* D'Orb., *Melampus coffeus* L., *Choanopoma Wilhelmi* Pfr., *C. Puertoplatense* Pfr., *Chondropoma Petitianum* Pfr., *Helicina rugosa* Pfr., *H. malleata* Pfr., and an undetermined species of *Helicina*.

DESCRIPTIONS OF SOME NEW TASMANIAN
HELICES.

By W. F. PETTERD.

(From a Paper read before the Royal Society of Tasmania, 12th Nov., 1878.)

1. *Helix Dyeri*, n. sp.

Shell small, imperforate, depressedly discoid, thin, very highly polished, finely irregularly striated with lines of growth above and below, glassy yellow with irregular more or less distant rays of reddish-chestnut; spire depressed, small; whorls $3\frac{1}{2}$, flatly slanting outwards, last much distended, not descending in front, suture faintly impressed; aperture lunately-ovate, margins faintly approaching, joined by a rather thick deposit of callus, columellar margin dilated, entirely covering the perforation.

Diam., greatest $3\frac{1}{2}$, least $2\frac{1}{2}$; height $1\frac{1}{2}$ mil.

Habitat—In the thick mass of vegetation growing on the banks of Distillery Creek, near Launceston.

Under the lens a very pretty glossy species, that cannot possibly be mistaken for any other Tasmanian species. Its nearest ally is *Helix Nelsonensis* Brazier, from which it differs in being imperforate and is more often rayed with chestnut markings. Like the great majority of land shells it is a moist-loving species. Extremely rare and difficult to find.

2. *H. Roblini*, n. sp.

Shell small, deeply and narrowly uniliccate, discoid, white, finely, closely and regularly striated above and below, striæ abruptly terminating at the apical whorls ($1\frac{1}{2}$ to 2), which are distinctly spirally striate, with thread-like striæ; spire flat; whorls $4\frac{1}{2}$ slowly increasing in size, last rounded;

suture deeply excavate; aperture roundly lunate, not descending, margins distant, joined by an extremely thin deposit of callus; columella not dilated.

Diam., greatest $2\frac{3}{4}$, least 2; height 1 mil.

Habitat—Distillery Creek, near Launceston.

Of rare occurrence, attached to the under surface of large boulders in moist places. Easily recognised by the sudden termination of the striæ on the apical whorls and the pure white color.

3. *H. Kershawi*, n. sp.

Shell small, with a deep open umbilicus, depressed, thin, shining-brown, marked with black lines of growth, finely striated throughout with raised riblets, the interstices of which are strongly decussated; spire faintly sunk, often flat; suture much impressed; whorls $4\frac{1}{2}$, rather convex, last rounded, descending slightly in front and flattened above; aperture triangularly-ovate; margins distant, basal a little everted, joined by a very thin polished callus.

Diam., greatest 3, least $2\frac{1}{2}$; height $1\frac{1}{4}$ mil.

Habitat—Distillery Creek, near Launceston.

I have collected a considerable number of this species on the banks of the creek under the vegetation that covers the large boulders and rocks. Found in company with *H. neglecta* Brazier and *H. Halli* Cox.

4. *H. mimosa*, n. sp.

Shell small, openly umbilicated, reddish-brown, irregularly rayed and blotched with pure white, which markings are more conspicuous above than below; regularly closely striated throughout with slightly waved, thread-like striæ; spire flat; suture impressed; whorls $4\frac{1}{2}$, convex, apical, smooth, the last narrow, rounded, not descending, below striated as

above and descending into the deep open, perspective umbilicus; aperture lunate, margins approximating, columellar margin neither dilated nor reflected.

Diam., greatest 2, least $1\frac{1}{4}$; height 1 mil.

Habitat—First-basin near Launceston, among mosses on the branches and trunks of trees.

A prettily marked flat species of very constant and distinct character. In form it resembles *H. Belli* Cox, from New South Wales.

5. *H. Spiceri*, n. sp.

Shell perforate, turbinately-globose, thin, yellow-brown, shining; above obliquely striate and conspicuously decussate, base of body whorl almost smooth and much more shining than upper surface; whorls 5, convex, gradually increasing in size; spire obtusely conical, last slightly angled, not descending in front; aperture irregularly lunate; peristome thin, margins distant, joined by a thin but distinct callus; columellar margin slightly expanded.

Diam., greatest $1\frac{1}{4}$; height $1\frac{1}{4}$ mil.

Habitat—South Tasmania.

I am not quite certain as to the exact locality where this minute but very distinct form was collected. It has a general resemblance to *H. parvissima* Cox, but that species is smooth; it cannot therefore be mistaken for that nor in fact any other described species.

6. *H. Wynyardensis*, n. sp.

Shell with a narrow but deep umbilicus, convexly depressed, rather thick, reddish-brown above and yellowish-white beneath, dull, covered with a thin epidermis; striated with prominent rounded riblets above and below, the interstices with much finer striæ and decussate; spire small, only very slightly elevated; whorls $5\frac{1}{2}$, moderately convex,

suture impressed, last large and inflated ; aperture lunately-ovate ; peristome thin ; margins approximating, right somewhat depressed, columellar margin a little expanded.

Diam., greatest 11, least 9 ; height 4 mil.

Habitat—Table Cape, scrubs among decaying timber.

A distinct species belonging to the group of *Helix Hamiltoni* Cox and *H. Stephensi* Cox, but differs from any by its coloration and prominent riblets above and below. Rare and restricted to the locality given.

7. *H. rosacea*, n. sp.

Shell widely umbilicated, depressed, rusty-brown, indistinctly rayed with darker shade, dull, irregularly somewhat closely striated with rounded and slightly waved striæ, interstices with very fine striæ ; spire flat ; suture impressed ; whorls 5, convex, last rounded, a little descending ; base convex, ornamented with striations the same as upper surface ; umbilicus large and very open, somewhat shallow and flat at the bottom ; aperture ovately-lunate, slightly flattened above ; margins approaching ; peristome simple, acute.

Diam., greatest 6, least 5 ; height 2 mil.

Habitat—Rifle-butts near Launceston, in great numbers ; gregarious at the roots of Briar-bushes. (R. M. Johnston). Closely allied to *H. Legrandi* Cox and *H. McDonaldi* Cox, but differs principally from either in its very open umbilicus and the coloration. It is individually one of the most abundant species I have met with in this island, it may literally be collected by thousands at the locality given, where it was first observed by Mr. R. M. Johnston. I have not, strange to say, met with it elsewhere.

8. *H. Jungermanniæ*, n. sp.

Shell small, with a narrow deep umbilicus, thin, obliquely, strongly and irregularly striated with lines of growth and

very indistinct traces of spiral lines, brown with a bronze-like lustre; spire moderately elevated; apex often corroded; whorls $4\frac{1}{2}$, much rounded, last somewhat depressed; aperture roundly-lunate; peristome simple; margins approaching, joined by a thin callus, columellar margin faintly dilated.

Diam., greatest 3, least 2; height $1\frac{1}{4}$ mil.

Habitat—Cataract, near Launceston, in considerable numbers on the rocks under masses of *Jungermannia*. It has a close relation to *H. sitiens* Cox and *H. neglecta* Brazier, but may be distinguished from the first by the want of the regular prominent riblets and from the latter by its bronze-like general aspect and by not having the segments of color so persistent in that species.

9. *H. Mathinnæ*, n. sp.

Shell steeply somewhat narrowly umbilicated, depressed, covered with very prominent ribs, which are irregularly plicately fringed, widely apart and often faintly irregular in deposition and becoming almost obsolete at the apex; shining, horny, almost waxy appearance; interstices and ribs again striated, parallel with the ribs and also faintly transversely, giving the irregular crenated appearance to the base of the ribs; spire depressed; suture deep; whorls 4 to $4\frac{1}{2}$, rapidly increasing, convex, last rounded, not descending in front, base sculptured as upper surface and descending into the deep umbilicus, which is rounded at the bottom; intercostal spaces of base conspicuously decussate; aperture roundly-lunate; peristome acute; columellar margin not reflected.

Diam., greatest $6\frac{1}{2}$, least $5\frac{1}{2}$; height $2\frac{3}{4}$ mil.

Habitat—Near First-basin, Launceston, under stones.

The most beautifully sculptured of our known *Helices*, and one that cannot be mistaken for any other. The nearest

to it is *H. curaçoa* Brazier, but it differs from that species by its more elaborate ornamentation.

10. *H. Furneauxensis*, n. sp.

Shell minute, narrowly umbilicate, conoid, shining, horny, under the lens finely irregularly striated; whorls $4\frac{1}{2}$, rounded; suture impressed; spire a little elevated, obtuse at the apex; aperture almost circular; margins closely approaching; peristome simple; columellar margin faintly dilated.

Diam., greatest $2\frac{1}{2}$, height 1 mil.

Habitat—Furneaux Group and Waterhouse Island, Bass Straits.

A minute species with some resemblance to *H. Halli* Cox, but from which it can be known by its larger size, less elevated spire, and more open umbilicus.

11. *H. Henryana*, n. sp.

Shell minute, very openly, deeply umbilicated, discoidal, light-brown, very highly polished, with very faint traces of lines of growth; whorls $3\frac{1}{2}$, convex, regularly increasing in size; suture impressed; spire slightly elevated; aperture lunate; columellar margin not dilated.

Diam., greatest $1\frac{1}{2}$, least 1; height $\frac{3}{4}$ mil.

Habitat—Domain, Hobart Town.

Of this little shell I have only seen two specimens; they were found by my brother at the locality mentioned. Although approaching *H. Furneauxensis* mihi and *H. Halli* Cox, it may be known by its depressed form and shining smooth surface. I obtained some years ago specimens of a shell at Circular Head, in company with *H. cæsus* Cox and *H. pictilis* Tate, which may be of this species, but I have not now the specimens.

12. *H. Trucanini*, n. sp.

Shell perforated, depressly convex, of a deep rich brown, shining, obliquely striate throughout with lines of growth, many of which are distantly irregularly prominent, crossed by fine minute, spiral striæ, giving the shell under the lens a granular appearance; whorls 4, convex, impressed at the suture; apex obtuse and rounded, descending very little in front; periphery rounded; base convex, sculptured same as upper surface; perforation small and deep; mouth lunately rounded; lip thin, acute; margins distant, joined by a thin, smooth, polished callus; columellar margin dilated and almost concealing the perforation.

Diam., greatest $2\frac{1}{2}$, least 2; height $1\frac{3}{4}$ mil.

Habitat — Near First-basin, Launceston. Gregarious among mosses in the branches and on trunks of trees; also more sparingly on rocks overgrown by moss.

Although allied to *H. neglecta* Brazier and *H. Jungermanniæ* mihi, it is nevertheless very distinct by its smaller size, different color, and the umbilicus is small and almost concealed.

13. *H. Lottah*, n. sp.

Shell openly umbilicated, depressed, discoid, translucent, thin, white, scarcely shining; regularly, rather coarsely ribbed throughout, interstices with extremely fine striæ; spire flat; suture moderately impressed; whorls $4\frac{1}{2}$, slightly convex, apical ($2\frac{1}{2}$) quite smooth, last rounded, not descending in front; below, with striæ as above, running into the somewhat shallow, open umbilicus, which is flattened at the bottom; aperture lunate; peristome simple, thin.

Diam., greatest $2\frac{3}{4}$, least 2; height 1 mil.

Habitat—Cataract Hill, near Launceston, on the under surface of large boulders.

A pure white species allied to *H. Roblini* mihi, but that species is finely striated throughout and its umbilicus is not nearly so open. To *H. Bassi* Brazier, it is so closely related that it may possibly be but a variety, but it is much smaller, has a much less shallow umbilicus and the riblets are coarser than in its larger congener. All three are of the same habits, found on the under surface of boulders, generally in rather dry situations, and all are of extreme rarity.

14. **H. Barrenensis**, n. sp.

Shell small, discoid, thin, regularly, somewhat closely ribbed; under the lens the interstices strongly decussate; embryonal whorl smooth, horny brown; spire much submerged gradually; whorls $5\frac{1}{2}$, last rounded, base with ribs as above, umbilicus widely open, shallow, freely exposing the whorls; aperture vertical, semilunar, faintly flattened above; peristome simple.

Diam., greatest 2, least $1\frac{3}{4}$; height 1 mil.

Habitat—Furneaux Group, Bass Straits. (Mr. R. M. Johnston).

Invariably in clusters, gregarious in shallow depressions on the sand hillocks. Closely allied to *H. lirata* Cox, from New South Wales.

Hobart Town, Tasmania,
December 14th, 1878.

PROCEEDINGS OF THE CONCHOLOGICAL SOCIETY
OF GREAT BRITAIN AND IRELAND.

1879.

46th Meeting—June 12th.

Held at the Society's room, Leopold Square, Leeds.

Mr. B. Holgate, F.G.S., in the chair.

DONATIONS TO THE LIBRARY.

The following were announced and thanks voted to the donors:—

Synonymy of and remarks upon Tasmanian and other Shells,
with their Geographical distribution, by John Brazier, 1876.

[The Author.

Die geographische Verbreitung der Binnen-mollusken, by Dr.

W. Kobelt, 1876.

[The Author.

DONATION TO THE COLLECTIONS.

The following was announced and thanks voted to the donor:—

Clausilia bidens, from the Coliseum, Rome.

[Mr. John Emmet.

NEW MEMBER.

Mr. J. D. Butterell of Hull was proposed as a new member.

HELIX CONCINNA.

Mr. W. D. ROEBUCK exhibited a number of shells collected in different parts of Yorkshire, including *Helix concinna*, from St. Mary's, York. This species has frequently been erroneously recorded for various Yorkshire localities, but has not been thoroughly well known by collectors in general. The specimen was identified by Mr. John W. Taylor.

FRENCH SHELLS.

A letter from Mr. ROBERT SCHARFF of Bordeaux to Mr. Taylor, in which various interesting records of French shells were given, including *Helix revelata* Fér. (*H. occidentalis* Recluz) at Braune on the Dordogne river, also *Unio littoralis* Cuv., and *U. Requieri* Mich., along with *Physa acuta*, *Limnæa peregra* and *Planorbis leucostoma* from the river; also *Bulinus tridens* Brug., from near Bordeaux.

ALGERIAN SHELLS.

Mr. JOHN W. TAYLOR exhibited a number of shells collected by Mr. J. H. Ponsonby during his recent tour in Algeria, nearly the whole of the *Helices* are characterised by the massive chalky-white appearance peculiar to arid situations. The collection included *Helix cariosula* Mich., Oran, *H. candidissima* Drap., Algiers, *H. depressula* Parr., Oran, *H. alabastrites* Mich., Oran, (also its variety *quinquefasciata* = *H. soluta* Ziegl., Oran), *H. hieroglyphicula* Mich., Oran, *H. subrostrata* Fér., St. Denis, *H. submaritima* Drap., Algiers, *H. pyramidata* Drap., Algiers, *H. apicina* Lam., Algiers, *H. acompsia* Bourg., Algiers, *H. amanda* Rossm., Algiers, *H. lenticula* Fér., Algiers.

NEW SPECIES.

Mr. JOHN W. TAYLOR exhibited various new species of *Amphipeplea* and *Physa* from New Guinea and Tasmania, descriptions of which it is his intention to read at the next meeting.



DISCOVERY OF *DIPLOMPHALUS* IN TASMANIA.

By W. F. PETTERD.

A species of this interesting genus has recently been discovered in this island. It resembles *D. Megei* Lambert, from New Caledonia, but is much smaller.



NOTE ON *COCHLICOPA TRIDENS* (PULTENEY).

BY JOHN W. TAYLOR.

Some modification would appear to be advisable in the description of the typical form of this species as understood by English authors, and the alteration suggested will be the more desirable as it will bring our apprehension of the species into harmony with that of our continental brethren.

The shell is perhaps better known on the continent by C. Pfeiffer's name of *Menkeanus*, but the name *tridens* bestowed by Pulteney was long anterior and should be retained.

I have not had the opportunity of consulting Pulteney's original description, but am inclined to believe that it will not be found to have been compiled with that precision and exactitude that is now desirable.

Dr. Jeffreys in his 'British Conchology,' vol. i., page 290, describes with care and minuteness the armature of the aperture both as usually existing and as occasionally found, and enumerates one variation—*crystallina* Dupuy—and further remarks that "a variety (the *Azeca Nouletiana* of Dupuy) has been found by Boissy in the Pyrenees."

It would appear from this that Dr. Jeffreys at the time of the publication of his valuable work was unaware that the variety of *C. tridens* described by Dupuy as *Nouletiana* was really the prevailing British form. The figures on pl. xviii. vol. v. would appear as though intended to represent the variety *Nouletiana* and not the type as understood in this paper.

Lovell Reeve in 'British Land and Freshwater Mollusks' describes and figures the species, but hardly in a satisfactory manner.

Prof. R. Tate in his little work 'British Mollusks,' published by Hardwicke, does not give a formal description but says "the

aperture is furnished with folds or teeth of which there are usually three ;" the fig. on pl. ix., though rough, represents the type shell as understood on the continent and in this note.

I would propose if accordant in other respects with the usual diagnosis that the specimens conforming to the following description of the armature of the aperture be considered as the type:—

Aperture obliquely pyriform, a very strong fold on the penultimate whorl, its crest sometimes notched, a small denticle close to the fold and nearer the outer lip, a sinuous lamella on the columella notched at the termination close to the margin, and two denticles on the outer lip, one marginal and central, the inferior more remote from the margin and nearer the columella.

In England this form is not very common, and I know of very few localities where it may be found: Ilkley, Yorkshire; Dorridge, Warwickshire, &c.

Var. **Nouletiana** Dupuy. Shell rather larger and thinner, a single denticle only on outer lip, peristome thinner.

This is our common English form. Jeffreys and Reeve are dubious as to its occurrence in Scotland. Mr. Alfred Brown of Glasgow however informs me that he has found it at the Bridge of Allan, Perthshire, thus establishing it as a Scotch species.

Var. **Alzenensis** St. Simon. Outer lip bearing two deeply-seated denticles in addition to those described in the typical form.

Found at Dorridge, &c., Warwickshire.

Monstr. **sinistrorsa**. Shell reversed.

A specimen of this form has been found by Mr. J. Emmet of Boston Spa and is in that gentleman's collection.

Var. **crystallina** Dupuy. Shell greenish-white.

Generally found associated with specimens of the ordinary color, but sparingly.

Leeds, June 10th, 1879.



BIBLIOGRAPHY.

1876.

LAND AND FRESHWATER MOLLUSCA.

Adami (Giov. Battista).—List of Mollusks of Sassari in Sardinia.—Molluschi dei dintorni di Sassari in Sardegna.—Bull. Soc. Mal. Ital. 1876, ii. pp. 219 to 222.

Of *Hyalina* 4 species, *Helix* 22, *Buliminus* 2, *Stenogyra* 1, *Cionella* 2, *Pupa* 3, *Clausilia* 1, *Succinea* 1, *Carychium* 1, *Limnæa* 4, *Planorbis* 1, *Ancylus* 1, *Cyclostoma* 2, *Bithynia* 2, *Neritina* 1 and *Pisidium* 1 species are named.

Belgian Malacological Society.—Recent and Fossil Shells collected near Angre.—Rapport sur l'excursion annuelle de la Société Malacologique (17 Septembre 1876) par **A. Rutot.**—Bull. des Séances, Soc. Mal. Belg. 1876, pp. lxx. to lxxv.

The recent species obtained included an *Oleacina*, a *Cœcili-anella*, a *Succinea*, a *Pupa*, 5 *Helices*, a *Balia*, a *Clausilia* and a *Limax*. Of fossils M. Vincent recognized 29 species of *Triton*, *Murex*, *Fusus*, *Pleurotoma*, *Natica*, *Solarium*, *Turritella*, *Calyptræa*, *Bulla*, *Panopæa*, *Pholodomya*, *Tellina*, *Cytheræa*, *Cyprina*, *Cardium*, *Isocardia*, *Nucula*, *Cucullæa*, *Modiola*, *Pinna*, *Pecten* and *Ostrea*.

Brazier (John, C.M.Z.S.).—Description of 14 New Species of Shells from Australia and the Solomon Islands.—Proc. Lin. Soc. New S. Wales 1875, i. pp. 1 to 9.

The new species are *Helix* (*Dorcasia*) *Blackalli*, Queensland, *H. (Thalassia)* *Gayndahensis*, Queensland, *H. (Hadra)* *Bayensis*,

Queensland, *H. (Corasia) Wisemani*, Solomon Archipelago, *Bulinus (Eumecostylus) Macfarlandi*, Solomon Archipelago, *Helicina (Trochatella) Sophiae*, Solomon Islands, *Pupina Macleayi*, Queensland, *P. Angasi*, New Guinea, *Epidromus Bednalli*, South Australia, *Cypræa Sophiae*, Solomon Archipelago, *Conus (Rhiziconus) Sophiae*, Solomon Archipelago, *Cassis (Casmaria) Thomsoni*, off Sydney Heads, *Bythinia hyalina*, New South Wales.

Brazier (John, C.M.Z.S.)—Descriptions of 8 Species of Australian and Tasmanian Land and Freshwater Shells.—Proc. Lin. Soc. New S. Wales 1875, i. pp. 17 to 20.

These are *Helix (Hadra) rufofasciata*, South Australia, *H. (H.) Cookensis*, Northeast Coast, *H. (Rhytida) Langleyana*, Tasmania, *H. (Charopa) Nupera*, King George's Sound, *Pupa (Vertigo) Rossiteri*, New South Wales, *Amnicola Petterdiana*, Tasmania, *A. Simsoniana*, Tasmania, *Planorbis meridionalis*, Tasmania.

Brazier (John, C.M.Z.S.)—Description of 2 New Species of Australian Land Shells.—Proc. Lin. Soc. New S. Wales, 1876, i. p. 97.

Helix (Hadra) Tomsoni and *H. (H.) Hanni*, both from Queensland.

Brazier (John, C.M.Z.S.)—Description of a New Pupina collected during the Chevert Expedition.—Proc. Lin. Soc. New S. Wales, 1876, i. pp. 136, 137.

Pupina nitida, Barrow Island, Northeast Australia, near *P. ventrosa* Dohrn.

Brazier (John, C.M.Z.S.)—Synonymy of and remarks upon Tasmanian and other Shells, with their Geographical Distribution.—Proc. Roy. Soc. Tasmania, 1876, pp. 168 to 172.

The synonymy of 17 species is given.

Brazier (John, C.M.Z.S.)—**Descriptions of 35 New Species of Land Shells from New Guinea, Australia, and Islands in Torres Straits, collected during the Chevert Expedition.**—Proc. Lin. Soc. New S. Wales, 1876, i. pp. 98 to 113.

Helix (Rhytida) Beddomei, N. Australia, *H. (R.) Jamesi*, N.E. Australia, *H. (R.) Hobsoni*, N.E. Australia, *H. (Thalassia) annulus*, New Guinea, *H. (T.) Sappho*, New Guinea, *H. (Discus) Lomonti*, New Guinea, *H. (Conulus) Muino*, New Guinea, *H. (C.) Reedei*, Torres Strait, *H. (C.) Darnleyensis*, Torres Strait, *H. (C.) Barnardensis*, N. E. Aust., *H. (C.) Nepeanensis*, Torres Strait, *H. (C.) Starkei*, New Guinea, *H. (Patula) Spaldingi*, N. Australia and Torres Straits, *H. (C.?) Porti*, N. Australia, *H. (C.?) Grenvillei*, N.E. Australia, *H. (Ochthephila) D'Alvertisi*, New Guinea, *H. (Hadra) Palmensis*, N. E. Aust., *H. (Geotrochus) Yulensis*, New Guinea, *H. (G.) Strabo*, New Guinea, *H. (G.) Siculus*, New Guinea, *H. (G.) Braziera*, New Guinea, *H. (G.) Zeno*, New Guinea, *Bulimus Macleayi*, New Guinea, *Tornatellina Mastersi*, Torres Strait, *T. Grenvillei*, N. E. Australia and Cape York, *T. Petterdi*, Torres Straits, *T. terrestris*, New Guinea, *T. Eucharis*, N.E. Aust., *Pupa (Vertigo) Macleayi*, Torres Straits, *Pupina Crossei*, N.E. Australia, *Pupinella Crossei*, New Guinea, *Helicina Coxeni*, New Guinea, *H. Macleayi*, N.E. Australia, *H. Maino*, New Guinea, *Cyclophorus (Ditropis) Beddomei*, N. Australia. The localities here cited, Torres Straits, &c., refer to islands situated therein.

Brusina (Spiridion).—**Additions to the Monograph of Dalmatian and Croatian Campylææ.**—Aggiunte alla Monografia delle Campylææ della Dalmazia e Croazia.—Bull. Soc. Mal. Ital. 1876, ii. 53 to 61.

The monograph appeared in the Ann. Soc. Malac. Belg., tome IV. The additions are *C. stenonphala* Menke, *C. denudata* Rossm., *C. insolida* Ziegl., *C. prætexta* Parreyss, *C. imberbis* nov. sp., *C. lucescens* Kutschig, *C. Brusinæ* Stossich, and *C. crinita* Sandri.

Clessin (S.)—*Helix tenuilabris* still living in South Bavaria.—*Helix tenuilabris* Braun, in Südbayern lebend vorhanden.—Nachrichtenblatt d. Deuts. Mal. Ges., May 1876, viii. pp. 67, 68.

Clessin (S.)—Note on *Helix ammonis* Schmidt, from Upper Italy.—Nachrichtenblatt d. Deuts. Mal. Ges., April 1876, viii. p. 56.

Clessin (S.)—Observations on the German species of *Planorbis*.—Bemerkungen über die deutschen Arten des Genus *Planorbis* Guett.—Jahrb. Deuts. Mal. Ges. 1876, iii. pp. 262 to 275.

Planorbis vorticulus Trosch. and *charteus* Held. ; *P. vortex* L. ; *P. contortus* L. and *dispar* West. ; are the subjects of this notice.

Colbeau (Emile).—List of Land and Freshwater Mollusca of Walcourt in Belgium.—Mollusques terrestres et fluviatiles vivants du Canton de Walcourt.—Bull. des Séances, Soc. Mal. Belg. 1876, pp. lxiii to lxvii.

The canton is situated in the drainage basin of the river Sambre. The list includes 1 *Arion*, 2 *Limax*, 4 *Succinea*, 1 *Zonites*, 12 *Helix*, 2 *Bulimus*, 3 *Clausilia*, 2 *Pupa*, 2 *Planorbis*, 1 *Physa*, 4 *Limnæa*, 2 *Ancylus*, 1 *Bythinia*, 1 *Neritina*, 1 *Anodonta*, 2 *Unio*, 2 *Pisidium* and 1 *Cyclas*.

Dybowski (W.)—Gastropod-Fauna of Lake Baikal.—Die Gasteropoden-Fauna des Baikal-Sees. — Mém. de l'ac. imp. des Sciences de St. Pétersb. VII. Série, tome XXII. No. 8, 73 pages and 8 plates, 4to.—Reviewed by Dr. E. von Martens, Jahrb. d. Deuts. Mal. Ges., April 1876, iii. pp. 181 to 184 ; also by W. H. Dall, Proc. Bost. Soc. Nat. Hist. 1876, xix. pp. 43 to 47.

In the original paper M. Dybowski treats of a number of new and interesting forms from Lake Baikal, and proposes several new genera and subgenera, viz. :—*Benedictia*, for a new species, *B.*

fragilis: a new genus *Limnorea*, with two new subgenera, *Leucostia* (for four new and one previously named species) and *Ligea* (eight new species).

Prof. E. von Martens in his review points out that several of the new generic names have been preoccupied in Zoology, and in accordance with this view renames *Limnorea* as *Baicalia*, *Leucostia* as *Liobaicalia* and *Ligea* as *Trachybaicalia*. Mr. Dall in his subsequent criticisms amends the spelling of Martens' new genera so as to read *Baikalia* and *Liobaikalia*, and suppresses the *Trachybaicalia*, regarding the species of this as the typical form of *Baikalia*. He regards the whole assemblage of species as part of the old genus *Tryonia* Stimpson, and regards *Baikalia* and *Liobaikalia* as merely subgenera of it; adding another subgenus of his own creation, *Dybowskia*, the type of which is *Ligea ciliata* Dybowski.

Gaucher (Elie).—Shells from Schaffhausen and Constance.—Bull. des Séances, Soc. Mal. Belg. 1876, p. lxxvi.

Twelve species of *Helix*, a *Bulimus*, 3 of *Clausilia*, a *Pupa* and a *Limnæa*.

Heimburg (H. von).—Molluscan Fauna of East Holstein.—Mollusken-Fauna von Ost-Holstein.—Nachrichtsblatt d. Deuts. Mal. Ges. Nov. 1876, viii. pp. 133 to 135.

One *Limax*, 2 *Hyalina*, 4 *Helix*, 4 *Pupa*, 1 *Clausilia*, 2 *Limnæa*, 1 *Planorbis*, 1 *Paludina*, 1 *Neritina*, 3 *Pisidium* and 1 *Dreissena* enumerated as additional to the fauna, which consists of 9 slugs, 64 land shells and 56 fluviatile species—in all 129 species.

Issel (Prof. Arturo).—Banded Limnæas and Pearl-bearing Anodons in a Piedmontese Lake.—Delle Limnee ornate di fascie e delle Anodonte perlifere trovate nel Lago d'Alice in Piemonte.—Bull. Soc. Mal. Ital. 1876, ii. pp. 50 to 52.

This very productive lake yields distinctly-banded examples of *L. palustris* Müller. In less abundance occur specimens of *L. auricularia* Drap., var. *ventricosa* Hartmann, with pale bands on the last whorl. Prof. Issel also possesses fasciated examples of *L. peregra* Müll., from the Maritime Alps. Another singularity of the lake is the occurrence of a peculiar form of *Anodonta cygnea* L., and of *A. variabilis* Drap., bearing pearls. These concretions are described, and their formation accounted for by the irritation produced in the Anodons by certain larvæ which abound in the lake.

Kobelt (Dr. W.)—Conchological Miscellanies.—Conchologische Miscellen.—Jahrb. Deuts. Mal. Ges., April 1876, iii. pp. 149 to 154 and plate 5.

Helix Caffra var. *Wesseliana* v. Maltz., *H. Amaliæ* var., *Auricula Reiniana*, new species from Nipon, *Clausilia ducalis*, n. sp. from Nipon, *C. Reiniana* var., are noticed.

Kobelt (Dr. W.)—Conchological Miscellanies (continuation).—Conchologische Miscellen (Fortsetzung).—Jahrb. Deuts. Mal. Ges. July 1876, iii. pp. 275 to 278 and plate 8.

Helix Senckenbergiana var. (Japan); *Clausilia Nipponensis* (Japan); *Melania Reiniana* (Japan); and *Tomocylus Gealei* Crosse and Fischer (Chiapas, Mexico), are described and figured.

Kobelt (Dr. W.)—On the Italian Fauna.—Zur Fauna Italiens.—Jahrb. Deuts. Mal. Ges., Oct. 1876, iii. p. 344.

The present article deals with the Upper Italian *Campylæ*: and treats successively of the group of *Helix cingulata* and that of *H. frigida* Jan.

Lefevre (Th.)—Excursions Malacologiques a Valenciennes, Soissons et Paris (Septembre 1876).—Bull. des Séances, Soc. Mal. Belg. 1876, pp. lxxxv. to xcvi.

At Valenciennes was noted the Museum of Natural History, at Soissons the collection Watelet, excursions were made to Laversine and Cœuvres, to Vanbuin, the Museum of Soissons was inspected and also the collection of Dr. Bezançon.

Liardet (E. A.)—On the Land Shells of Taviuni, Fiji Islands, with descriptions of New Species.—P.Z.S., 1876, pp. 99 to 101.

The land shells of Taviuni are mostly small and inconspicuous and inhabit the coast-lands.

Considering the moist temperature, dense vegetation and mountainous character of the island, the scarcity of species is surprising. They mostly locate under logs and stones, seldom exposing themselves to light.

The numerous small coast-land shells are common to most of the islands, and doubtless are frequently transported from one island to another, and though they may occasionally be destroyed by a subsidence of the land, they no doubt are speedily reintroduced.

Coral indications show that this island has been submerged up to 500 feet, and it is at about this height that the truly indigenous fauna of the island begins to be found, which consists of a moderately large *Helix* (*H. casca*) and a *Bulimus*. Some *Helicinae* are also rarely to be found. *Partula lirata* frequent the underside of the leaves of *Dracæna* and *Dilo* trees near the coast. *Pupina* are found mostly under decayed logs at 500 feet and upwards.

Eleven species are described as new, viz. :—

Nanina? taviuniensis (Pl. v., f. 1, 1a, b). Taviuni and Gamia, Fiji.

Nanina? vitrinina (Pl. v., f. 2, 2a). Under logs in moist situations.

Nanina? Ramsayi (Pl. v., f. 3). Taviuni; allied to *N. vitrinina*. "Animal red; a protuberance on the back rests against the shell anteriorly. It progresses by raising its head, extending the body and placing the posterior part of the foot down in the form of an arch, lands its body gradually from the head; and this arch thus appears to recede until the caudal extremity is reached." Its mucus is of a brick-red color, resembling *Vitrina Strangei* of Australia.

Helix Princei (Pl. v., f. 4, 4a). Taviuni; a very small, depressed, dark brown, prominently costated species, with a wide and perspective umbilicus and round aperture, resembling some of the Australian *Helices*.

Helix Pinnocki (Pl. v., f. 5, 5a). Taviuni.

Helix Barkasi (Pl. v., f. 6). Taviuni.

Helix Clayi (Pl. v., f. 7). Taviuni.

Lamellaria perforata (Pl. v., f. 8, 8a). Taviuni; found imbedded in the bark of dead logs. The animal has the tips of the eye pedicels bulbous.

Diplommatina Taviensis (Pl. v., f. 9, 9a). Animal with two tentacles, short and cylindrical, with an active arched motion as in *Helicina*, eyes situated at inner base of tentacles.

Lagocheilus hispidus (Pl. v., f. 10, 10a). Gamia, Fiji; rare.

Omphalotropis vitiensis (Pl. v., f. 11, 11a). Islets off Taviuni.

Martens (Dr. Ed. von).—**On some Japanese Land Snails.**
—Ueber einige japanische Landschnecken.—Jahrb. Deuts. Mal. Ges., Oct. 1876, iii. pp. 357 to 363.

Numerous species of *Helix*, *Pseudohyalina*, *Cælopoma*, *Pupina* and *Clausilia* are noticed, and the following described as new:—*Clausilia platydera*, *C. interlamellaris* and *C. validiuscula*.

Martens (Dr. Ed. von).—**Some New Greek Snails.**—Einige neue griechische Schnecken.—Jahrb. Deuts. Mal. Ges., Oct. 1876, iii. 338 to 343 and plate 12.

Helix distans Blanc MS., Corfu, *H. Dirphica* Blanc MS., M. Delphi, *H. Chalcidica* Blanc MS., Chalcis, *Clausilia Blanci*, Boeotia, *C. Thebana* Blanc MS., Thebes, *C. osculans*, Attica, and *C. messenica*, Messina, are described and figured.

Martens (Prof. Ed. von).—**Landsnails from Costa Rica and Guatemala.**—Landschnecken aus Costarica und Guatemala.—Jahrb. Deuts. Mal. Ges., July 1876, iii. pp. 253 to 291 and plate 9.

Cyclotus bisinuatus Mart., *C. Quitensis* Pfr., var. *Costaricensis* Mart., *Glandina Sowerbyana* Pfr. var. *B.*, *Helix Costaricensis* Roth., *H. triplicata* Mart., *Bulimus tripictus* Albers, *Bulimulus Jonasi* Pfr., *B. Costaricensis* Pfr., *B. attenuatus* Pfr., *B. fidustus* Reeve, are noticed particularly, while *Helicina anozona* and *Cylindrella (Gongylostoma) polygyrella* are described and figured as new and a list of 32 other species is given.

Martens (Prof. Ed. von). — **Shells from the Comores Islands.**—Conchylien von den Comoren.—Jahrb. Deuts. Mal. Ges., July 1876, iii. 250 to 253.

Cyclostoma Hildebrandti, *Ennea quadridentata* and *E. Comorensis* are described and figured as new. The names of 12 other species are given and the article concludes with a list of 17 species after Morelet.

Martens (Dr. Ed. von).—**Central Asian Mollusca.**—Binnen-Mollusken von Chiwa.—Jahrb. Deuts. Mal. Ges., Oct. 1876, iii. pp. 334 to 337.

Buliminus Oxianus is described as new, also a variety, *Oxiana* of Cyrena (*Corbicula fluminalis*); and 7 species of *Helix*, *Pupa*, *Hydrobia*, *Neritina*, *Dreissena*, *Anodonta* and *Cardium* are cited, all collected in the vicinity of the Caspian and Oxus.

Martens (Dr. E. von).—A New Transcaucasian Clausilia.
—Eine neue transcaucasische Clausilie.—Nachrichtsblatt d.
Deuts. Mal. Ges., July 1876, viii. pp. 90, 91.

Clausilia acrolepta, collected by Oscar Schneider on Mount
Schaw Nabedeli (7–8000') between Mount Abul and the Jabizhuvi
Lake in the upper valley of the Kur, Russian Armenia.

**Martens (Dr. Edward von).—Transcaucasian Mollusca
collected by Dr. O. Schneider.**—Transkaukasische
Mollusken von Dr. O. Schneider gesammelt, bestimmt von
E. von Martens. —Jahrb. Deuts. Mal. Ges., Oct. 1876, iii.
pp. 364 to 370.

A list including 8 species *Hyalina*, 2 *Patula*, 21 *Helix*
(various subgenera), 13 *Bulimus* (ditto), 4 *Vertigo*, 9 *Clausilia*
(various subgenera), 1 *Cionella*, 1 *Cæcilianella*, 2 *Succinea*, 3
Limnæa, 2 *Planorbis*, 1 *Cyclostoma*, 1 *Cyclotus*, 1 *Paludina*, 1
Hydrobia, 1 *Valvata*, 1 *Neritina*, 1 *Dreissena*, 2 *Cardium*, 1
Adacna, 1 *Corbicula* and 1 *Pisidium*, besides varieties. Three
are described as new, viz.:—*Bulimus (Pupilla) interrupta* Reinh.,
Vertigo (Isthmia) clavella Reinh., and *Clausilia acrolepta*.

Meyer (F.).—List of Shells of Metz district.—Zur Fauna
von Elsass-Lothringen. II. Die Fauna von Metz. (Schluss).
—Nachrichtsblatt d. Deuts. Mal. Ges., April 1876, viii. pp. 51
to 56.

This paper completes the list of Metz shells. It includes 5
Limnæa, 1 *Amphipeplea*, 2 *Physa*, 9 *Planorbis*, 2 *Ancylus*, 1
Pomatias, 1 *Cyclostoma*, 1 *Paludina*, 1 *Bythinia*, 1 *Paludinella*,
2 *Valvata*, 1 *Neritina*, 3 *Unio*, 5 *Anodonta*, 4 *Cyelas*, 2 *Pisidium*
and 1 *Tichogonia*.

**Meyer (F.).—Catalogue of Land and Freshwater Mol-
lusca of Alsace.**—Hagenmüllers Verzeichniss der Land-
und Süßwasser-Mollusken des Elsasses.—Nachrichtsblatt d.
Deuts. Mal. Ges., Sep. and Oct. 1876, viii. pp. 104 to 106 and
113 to 123.

Nine species of *Arion*, 1 *Krynckia*, 3 *Limax*, 3 *Vitrina*, 4 *Succinea*, 8 *Zonites*, 28 *Helix*, 4 *Bulimus*, 1 *Achatina*, 1 *Ferussacia*, 10 *Clausilia*, 11 *Pupa*, 7 *Vertigo*, 1 *Carychium*, 11 *Planorbis*, 3 *Physa*, 7 *Limnæa*, 2 *Ancylus*, 1 *Cyclostoma*, 1 *Acme*, 1 *Pomatias*, 2 *Bythinia*, 2 *Paludina*, 3 *Valvata*, 1 *Nerita*, 5 *Anodonta*, 5 *Unio*, 6 *Pisidium*, 2 *Cyclas* and 1 *Dreissena* enumerated, besides numerous varieties.

Mazyck (W. G.)—On the Occurrence of *Helix terrestris* Chemnitz, in North America.—Proc. Ac. Nat. Sci. Philad. 1876, pp. 127 and 128 and woodcut.

Found at Charleston, South Carolina.

Pantanelli (Dott. Dante).—Catalogue of Land and Fluvial Mollusca of the Basin of Marroggia (Spoleto, Italy).—Catalogo dei Molluschi terrestri e fluviatili del Bacino del Marroggia (Spoleto).—Bull. Soc. Mal. Ital. 1876, ii. pp. 233 to 240.

After a short geological introduction, are enumerated 3 *Hyalina*, 21 *Helix*, 3 *Buliminus*, 3 *Cionella*, 1 *Stenogyra*, 5 *Pupa*, 1 *Vertigo*, 3 *Clausilia*, 1 *Succinea*, 1 *Carychium*, 4 *Limnæa*, 2 *Planorbis*, 1 *Ancylus*, 1 *Cyclostoma*, 1 *Paludina*, 2 *Bythinia*, 1 *Unio* (long note on this), and 1 *Pisidium*.

Pini (Napoleone).—Catalogue of Land and Freshwater Mollusca of the territory of Esino, Lombardy.—Molluschi terrestri e d'acqua dolce viventi nel territorio d'Esino.—Bull. Soc. Mal. Ital. 1876, ii. 67 to 205 and 2 colored plates.

A lengthy and elaborately worked out list. The territory of Esino is situated in the middle and eastern portion of the province of Como. The author cites a long list of works consulted by him when preparing this paper, and defines his district. Adopting Albers' arrangement as the most natural, the author enumerates

and describes 5 species of *Limax*, 1 *Lehmannia*, 1 *Amalia*, 5 *Vitrina*, 8 *Hyalina*, 2 *Arion*, 20 *Helix*, 3 *Buliminus*, 2 *Cionella*, 1 *Balia*, 10 *Clausilia*, 7 *Pupa*, 6 *Vertigo*, 3 *Succinea*, 1 *Carychium*, 6 *Limnæa*, 1 *Physa*, 2 *Planorbis*, 1 *Ancylus*, 1 *Cyclostoma*, 1 *Pomatias*, 1 *Acme*, 2 *Valvata*, 2 *Paludina*, 1 *Bythinia*, 1 *Hydrobia*, 1 *Neritina*, 2 *Sphærium*, 1 *Pisidium*, 2 *Unio* and 1 *Anodonta*. In addition to these species Signor Pini describes a large number of varieties and mutations, many for the first time. One new species *Pisidium Sordellianum* is also brought forward. A list of anomalies and monstrosities and a résumé of the species, varieties and mutations cited, end the monograph. The two plates represent various new forms of *Limax*.

Ramsay (E. Pierson, F.L.S.)—**Shells from New Ireland and Duke of York Island.**—Short note in a paper on a Collection of Birds from those islands, with some remarks on the Zoology of the Group.—Proc. Lin. Soc. New S. Wales 1876, i. p. 377.

Several land shells noticed.

Ressmann (Dr. S.)—**Malacological Fauna of St. Georgen am Langsee.**—Malakologische Fauna der gräfl. Egger'schen Herrschaft St. Georgen am Längsee. —Nachrichtsblatt d. Deuts. Mal. Ges., July 1876, viii. pp. 87 to 90.

A locality list including 3 species *Vitrina*, 7 *Hyalina*, 1 *Zonites*, 27 *Helix*, 3 *Bulimus*, 3 *Cionella*, 8 *Pupa*, 5 *Vertigo*, 12 *Clausilia*, 1 *Balia*, 1 *Carychium*, 1 *Acme*, 1 *Pomatias*, 3 *Succinea*, 6 *Limnæa*, 1 *Physa*, 5 *Planorbis*, 2 *Ancylus*, 1 *Paludina*, 1 *Bythinia*, 1 *Hydrobia*, 2 *Valvata*, 2 *Anodonta*, 1 *Cyclas* and 1 *Pisidium*.

Ressmann (Dr. F.)—**The Fauna of the Kanalthal in Austria.**—Die Fauna des Kanalthales.—Nachrichtsblatt d. Deuts. Mal. Ges., Nov. 1876, viii. pp. 129 to 133.

The valley is in Carinthia. Three species of *Vitrina*, 6 *Hyalina*, 2 *Zonites*, 25 *Helix*, 2 *Bulimus*, 1 *Cionella*, 8 *Pupa*, 16. *Clausilia*, 1 *Carychium*, 2 *Pomatias*, 1 *Succinea*, 1 *Limnæa*, 1 *Hydrobia* and 1 *Paludinella* are enumerated.

Roffiaen (Hector). — **Mollusca collected near Ghent, Belgium.**—Bull. des Séances, Soc. Mal. Belg. 1876, p. xlix.

The list includes 1 *Bythinia*, 2 *Zonites*, 5 *Helix*, 1 *Cæcilianella*, 1 *Clausilia*, 1 *Pupa*, 1 *Carychium*, 1 *Limnæa*, 2 *Physa*, 4 *Planorbis*, 1 *Cycas* and 1 *Unio*.

Strobel (Pellegrino). — **Land and Freshwater Mollusca of the Argentine Republic.**—Material per una malacostatica di terra e d'acqua dolce dell' Argentina meridionale.—Pisa, 1876, 8vo, sheets 7 to 10, pp. xix.—lxxx. and 1 plate.

The plate includes *Limax Argentinus*, *Hyalina Argentiniana*, *Helix Cuyana*, *Bulimulus Cordillerae*, *B. Mendosanus* and *Stenogyra Martensi*.

Schepmann (M. M.). — **Planorbis vorticulus** Troschel. — Nachrichtenblatt d. Deuts. Mal. Ges., Sep. 1876, viii. 107.

Schepmann (M. M.). — **Helix Mograbina mor. and degenerans** Mouss. — Nachrichtenblatt d. Deuts. Mal. Ges., Nov. 1876, viii. 135, 136.

Westerlund (C. A.). — **Planorbis centrogyratus.** — Nachrichtenblatt d. Deuts. Mal. Ges., May 1876, viii. 76, 77.

A short note.

Westerlund (Dr. C. Ag.). — **New Siberian Mollusca.**—Neue Binnenmollusken aus Sibirien.—Nachrichtenblatt d. Deuts. Mal. Ges., Sep. 1876, viii. 97 to 104.

Limax hyperboreus, *Physa (Aplexa) hypnorum* L. var. *polaris*, *Physa (Isidora?) sibirica*, *Planorbis infraliratus*, *Valvata sibirica* Midd. restit. Westerl., *V. aliena*, *Sphærium levinodis*, *S. nitidum* Clessin, *Calyculina lacustris* Müll. var. *septentrionalis* Clessin, *Pisidium Nordenskiöldi* Cless., *P. Sibiricum* Cless., *P. boreale*

Cless., *P. mucronatum* Cless., are all described as new from specimens collected in the basin of the Jenissei river.

Woods (Rev. J. E. Tenison, F.L.S., F.G.S.)—**On a New Species of Ampullaria.**—Proc. Roy. Soc. Tas. 1876, p. 117.

A. Tasmanica, Tasmania.

Woods (Rev. J. E. Tenison, F.L.S., F.G.S.)—**On a New Reversed Tasmanian Helix.**—Proc. Roy. Soc. Tasmania 1876, pp. 160, 161.

Helix Weldii.



MISCELLANEOUS NOTES.

DREDGING IN THE HARDANGER FIORD.—This, one of the most beautiful and interesting of the Norwegian fiords, is intended to be the scene of the dredging operations of two of our most distinguished conchologists. The Rev. A. Merle Norman, M.A., and Dr. J. Gwyn Jeffreys, F.R.S., propose spending the ensuing month of August in its investigation, and the results will no doubt be commensurate with those obtained by the same gentlemen in the Bergen fiords, as published in the present volume.

GENUS *PLANORBELLA* Gabb.—On reference to the bibliography at p. 149 of the present volume the reader will notice that the late W. M. Gabb proposed a new Pteropod genus of the family *Limacinidae*, under this name. The name, however, has been previously applied by Haldeman to a subgenus of *Planorbis* of which *P. corpulentus* is the type.

YORKSHIRE NATURALISTS' UNION EXHIBITION AT LEEDS.—A most successful exhibition was recently held in connection with the Annual Meeting of the Union. The limited space placed at the disposal of the conchological department precluded a very extensive display of shells, but the main feature was Mr. Nelson's exceptionally fine collection of *Limnæidae*, other objects of great interest being collections of various kinds shown by Messrs. Scharff, Taylor, Wilcock, &c.



LAND AND FRESHWATER SHELLS OBSERVED IN
THE NEIGHBORHOOD OF REDCAR.

By C. ASHFORD.

The following list is the result of personal observation during the unfavorable months of March, April and May of this year and must be considered very imperfect. It should be noted that from the peculiar position of Redcar on a protuberance of the coast, a radius with that town for its extremity would sweep not much more than one-third of a circle of land—a fact likely to affect in no slight degree the number of occurring species. The following were found within four miles of Redcar:—

Sphærium corneum L. Ponds, Coatham Marshes.

Pisidium fontinale Drap. Extremely abundant in Meggitt's Ponds, Kirkleatham; Wilton Wood.

P. fontinale var. **pulchella**. Occasionally with the last in Meggitt's Ponds.

P. pusillum Gmel. In same ponds, sparingly.

P. pusillum var. **obtusalis**. Three examples from one of Meggitt's Ponds.

Bythinia tentaculata L. Beck between Redcar and Marske.

Planorbis nautilus L. Abundant on *Lemna minor* in a pond on Coatham Marshes. The usual ridges imperfectly developed.

Physa hypnorum L. Coatham Marshes; grassy ditch by the old railway, small but deeply colored.

P. fontinalis L. Coatham Marshes; Brickfields Pond. Plentiful.

Limnæa peregra Müll. In many dykes and ponds, abundant and very variable.

***Limnæa peregra* var. *ovata*.** In one pond on Coatham Marshes are fine, very thin examples closely approaching this variety and connecting it with var. *acuminata*.

***L. peregra* var. *labiosa*.** In one small dyke leading to the main drain across Coatham Marshes there is a general tendency to what I take to be this variety. The last whorl at the usual termination of its circuit suddenly and considerably expands, after the manner of the peak of a huntsman's cap. The peculiarity is most pronounced at the lower end of this dyke, gradually disappearing 200 yards higher up where the normal form only is found.

***L. truncatula* Müll.** Kirkleatham; Coatham Marshes.

***Ancylus fluviatilis* Müll.** Occurs sparingly in West Dyke.

***Arion ater* L.**

***A. hortensis* Fér.**

***Limax agrestis* L.**

} All three occur frequently in and
round the town.

***Succinea putris* L.** Pond and ditch sides beyond Redcar battery; Coatham Marshes, common but small and rather thick.

***Vitrina pellucida* Müll.** On the Sandhills from Tees' mouth to Saltburn.

***Zonites cellarius* Müll.** Under stones in many places: Brickfields, Race Course, &c.

***Z. alliarius* Miller.** Coatham Whin, Wilton Wood and Yearby Wood.

***Z. nitidulus* Drap.** Roadside Redcar to Marske, Coatham to Kirkleatham, &c.

***Z. purus* Alder.** Coatham Whin, Yearby Wood, Wilton Wood and Yearby Bank.

***Z. purus* var. *margaritacea*.** Two or three very pretty specimens occurred in Wilton Wood.

Z. radiatulus Alder. Wilton Wood, sparingly.

Z. crystallinus Müll. Copses, green lane to Kirkleatham; Wilton and Yearby Woods, &c.

Z. fulvus Müll. Wilton and Yearby Woods; Coatham Whin, associated with *crystallinus* and *purus*.

Helix lamellata Jeff. Wilton Wood, under dead leaves. This new locality supplies another link between Scarborough and Scotland. Mr. J. W. Watson reports it in Airy Holme Wood near Roseberry Topping, and Mr. Sutton quotes three localities in Durham and Northumberland. On the other hand Mr. Whitwham has found it near Huddersfield, thus extending its range southwards. For the encouragement of those who have searched long and fruitlessly among holly leaves for this pretty little gem, I may state as my experience that though I have taken dozens I never once met with it among the leaves of that tree, but chiefly under those of the beech and oak and sometimes at the roots of Bryum and other mosses in moist parts of woods.

H. aculeata Müll. Yearby and Wilton Woods. Occurs sparingly.

H. aspersa Müll. Especially partial to the Sandhills but not confined to them. I could not find the dwarf form so often occurring near the sea.

H. nemoralis L. Occurs on the whole range of Sandhills from Marske to mouth of Tees. In one hollow I counted among drifted dead shells 23 varieties of color and markings in three square yards. I met with no instances of var. *hortensis*, nor can Mr. J. W. Watson report it in the district.

H. hispida L. Extremely abundant on the Sandhills, particularly between Redcar and Marske; less common throughout the neighborhood.

H. fusca Mont. Wilton Wood (vide *J. C.*, ii. 128).

H. virgata Da Costa. Sandhills. Most abundant west of Coatham.

H. caperata Mont. Sandhills; most abundant E. of Redcar.

H. caperata var. **ornata**. One specimen on Coatham Sandhills.

H. ericetorum Müll. With last two species but much less common.

H. rotundata Müll. Wilton and Yearby Woods: common.

H. pulchella Müll. Common on the Sandhills between Redcar and Marske.

H. pulchella var. **costata**. With the last but less common.

Pupa umbilicata Drap. Sandhills E. of Redcar.

P. marginata Drap. Extremely abundant from Redcar to Marske, and occurs more sparingly from Redcar to Tees' mouth. Dead shells, beautifully cleared of their contents by insects, are drifted by the wind from the vegetation above into the smooth combs of the sand banks where they may be gathered by thousands, many in beautiful cabinet condition. I examined carefully with a lens for var. *bigranata*, but my patience failed at the 400th with only one incipient case to repay.

Vertigo pygmæa Drap. East of Redcar; Wilton Wood, very sparingly.

V. edentula Drap. Not uncommon in Wilton Wood.

Cochlicopa lubrica Müll. Common on the Sandhills; also in Wilton and Yearby Woods, situations strongly contrasted. Specimens from the woods are clearer and more glossy.

C. lubrica var. **lubricoides**. Two specimens occurred among the ordinary form on the sandhills.

Carychium minimum Müll. Under decayed timber in Coatham Whin; Yearby and Wilton Woods, common.

By extending the radius to ten miles so as to include Roseberry Topping, Guisborough, Ayton, Middlesborough, &c., but no part of co. Durham, the preceding list may be supplemented by 25 additional species on the authority of Mr. J. W. Watson of Redcar, and three others (marked W. C. H.) on the authority of the Rev. W. C. Hey of Guisborough.

Sphærium lacustre Müll. Round Stokesley and Ayton.

Pisidium fontinale var. **cinerea**. A running stream near Guisboro'. A batch of the fine series from this stream, some of them measuring $5\frac{3}{4}$ mil. in breadth, comprised the individuals referred to by the Rev. L. Jenyns in Ann. Nat. Hist., Aug. 1858.

P. amnicum Müll. Generally distributed in streams near Roseberry.

Anodonta cygnea L. Near Ayton.

Neritina fluviatilis L. Ballast hills near Middlesborough (alien? C. A.)

Valvata cristata Müll. Ditches; Great Ayton.

Planorbis glaber Jeff. Ponds near Ayton.

P. spirorbis Müll.

P. vortex L.

P. complanatus L.

P. contortus L.

} These four species occur in several waters near Roseberry.

Limnæa stagnalis L. Near Stockton-on-Tees.

L. palustris Müll. (decollated). Guisborough (W. C. H.)

L. glabra Müll. Ponds near Ayton.

Ancylus lacustris L. Ponds near Ayton.

Helix nemoralis var. **hybrida**. Coatham and Hutton Rudby.

H. rufescens Penn. Near Guisboro', Stokesley, Ayton, &c.

H. pygmaea Drap. Near Guisboro', Stokesley, Ayton, &c.

Bulimus obscurus Müll. Airy Holme Wood.

Pupa ringens Jeff. Airy Holme Wood.

Vertigo substriata Jeff. Guisborough Woods ; not rare
(W. C. H.)

V. pusilla Müll. Guisborough, very scarce (W. C. H.)

Balia perversa L. Airy Holme Wood.

Clausilia rugosa Drap. Near Guisborough, Ayton,
Stokesley, &c.

C. laminata Mont. Round Roseberry, but not common.

Cochlicopa tridens Pult. Airy Holme Wood.

Achatina acicula Müll. Among wreck cast up by the
river Tees (alien? C. A.)

Acme lineata Drap. Airy Holme Wood; not uncommon
some years back. (I have specimens from this wood in my cabinet
kindly presented to me by Mr. Watson in 1853, C.A.)

Airy Holme Wood, situate midway between the village of
Gt. Ayton and Roseberry Topping, perhaps 400 ft. above sea level,
and once so rich in good shells, has of late been sadly cut up. Mr.
Watson writes me—"Its glories as a conchological locality are I
am sorry to say a thing of the past. The Whinstone Trap Dyke
crosses the lower end of the wood, and quarrying for the
stone has destroyed all its beauties, and, it is to be feared has
exterminated some of the rarer species."



MISCELLANEOUS NOTES.

EXPLORING EXPEDITIONS.—We are happy to see various
expeditions are or have been set on foot by the smaller European
nations. A small Dutch expedition in 1878 in the "Willem
Barentz" made a cruise in the Spitzbergen Seas preparatory to a
more ambitious attempt in 1879. For three seasons the Nor-
wegians have organized—under the charge of Dr. Mohn and Dr.
Sars—expeditions for exploring the depths of the sea between

Norway, the Faroes, Iceland and Spitzbergen. Finally, Professor Nordenskjöld has successfully prosecuted his bold researches in the seas to the north of Siberia, effecting for the first time the north-east passage.

THE AMERICAN GEOLOGICAL SURVEYS.—Our readers will learn with surprise that the Legislatures both of the United States and of some of the States have begun to display illiberal feelings with respect to the admirable geological surveys of the various States and Territories. The Legislatures of Georgia and North Carolina have actually suspended their surveys, and that of Pennsylvania very nearly followed in their track; while the Federal Congress, failing to appreciate the value of Hayden's well-known Geological and Geographical Survey of the Territories, have discontinued the appropriations for that and two other surveys, replacing them by a single survey under the charge of Mr. Clarence King. This virtual dismissal of Prof. Hayden places a stigma on the Congress which failed to appreciate his labors which will not be easy to remove. The excellent nature of the zoological work performed by these surveys gives us a claim to express our opinion on the subject.

MUSEUM OF COMPARATIVE ZOOLOGY AT HARVARD COLLEGE.—The report for 1877-78 is prepared by Mr. Chas. E. Hamlin, whose own special work was the identification of the marine Lamellibranchiata. The lamented death of Mr. Anthony, who had for some years paid special attention to the land and fresh-water shells, necessitated the reporting upon his work by Mr. Hamlin. A large amount of labor has apparently been expended upon the various malacological collections.

PROCEEDINGS OF THE CONCHOLOGICAL SOCIETY
OF GREAT BRITAIN AND IRELAND.

1879.

47th Meeting—July 31st.

Held at the Society's room, Leopold Square, Leeds.

Mr. B. Holgate, F.G.S., in the chair.

DONATIONS TO THE LIBRARY.

The following were announced and thanks voted to the donors:—

Illustrirtes Conchylienbuch, herausgegeben von Dr. W. Kobelt,
vierte, funfte und sechste lieferungen. [The Author.

Synopsis novorum generum, specierum et varietatum mollus-
corum viventium testaceorum anno 1877 promulgatorum (exclusis
generibus Heliceorum, Auriculaceorum et pneumonopomorum)
collegit Dr. W. Kobelt, 1878. [The Author.

The Mollusca of the Fiords near Bergen, Norway, by Rev.
A. M. Norman, M.A. (reprinted from the Journal of Conchology,
1879). [Mr. J. W. Taylor.

NEW MEMBER.

Mr. J. Darker Butterell of Hull was elected a member of the
Society.

DONATION TO THE COLLECTIONS.

Cochlicopa tridens v. *Nouletiana* Dupuy.

C. tridens v. *crystallina* Dupuy.

Both from Ilkley, Yorks.

[Mr. J. W. Taylor.

COMMUNICATIONS RECEIVED.

Mr. JOHN W. TAYLOR communicated a letter which he had
received from Mr. CHARLES ASHFORD of Yarmouth, Isle of Wight,
inquiring as to the conditions of membership; also urging upon
the Society the formation of a collection of variations, which
should ultimately supply the much-felt need of a visible authority

for the named varieties : and that it should aim at procuring examples of every known variety of our home species, so as eventually to accumulate a series which any conchologist might find worthy of a special journey to consult.

Mr. JOHN W. TAYLOR read a letter from Mr. ROBERT SCHARFF of Bordeaux announcing the discovery of a *Pupa* new to France, the *Pupa claustralis* of Gredler, and a variety new to science, just described by Dr. Böttger, *Pupa Strobili* var. *Scharffi*.

SUCCINEA OBLONGA Drap.

Mr. JOHN W. TAYLOR exhibited on behalf of Mr. ROBERT M. CHRISTY of Brighton a specimen of this shell, found, apparently fossil, in the alluvium near the city of York, being the only specimen known to have occurred in that district.

This led to a lively discussion, in which the CHAIRMAN and Mr. THOMAS W. BELL joined. The question at issue was whether the shell shown was a dead recent one or a fossil. The decision was eventually in favor of its fossil origin.

PAPERS READ.

"Description of *Amphipeplea Petterdi*, nov. sp., from New Guinea."—By William Nelson.

"Descriptions of Three New Species of *Physa* from Queensland."—By William Nelson and John W. Taylor.

The species described are *P. Brisbanica*, *P. Beddomei*, and *P. fusiformis*.

"Description of *Helix Petterdi*, nov. sp. from Tasmania."—By John W. Taylor.

EXHIBITS.

A large number of shells collected about Oulton, Lotherton, Towton, Thorp Arch and Tadcaster were exhibited by Mr. WM. DENISON ROEBUCK and distributed amongst the members.

Mr. JOHN W. TAYLOR showed a number of shells from Askham Bog near York, including *Planorbis lineatus* and *Valvata cristata*, specimens of which were distributed amongst the members present.

BIBLIOGRAPHY.

 1 8 7 6 .

MARINE CONCHOLOGY.

Brazier (John, C.M.Z.S.)—A List of the Pleurotomidæ Collected during the Chevert Expedition, with descriptions of the New Species.—Proc. Lin. Soc. New South Wales, 1876, i. pp. 151 to 162.

Fifty-six species are enumerated in this paper, the stations and depths at which each species was obtained being carefully given.

Seven new species are described, viz.:—*Drillia Mastersi*, New Guinea 8 f., *D. Spaldingi*, Torres Straits 11—30 f., *Clathurella Darnleyi*, Torres Straits 20 f., *C. Ramsayi*, New Guinea 4 f., *C. Barnardi*, N. E. Australia, *C. Macleayi*, N. E. Australia, &c., 4—30 f., *C. tricolor*, N. E. Australia.

Seventy-five species in all were obtained in the course of the expedition, some of them being new, but as single specimens only were in many cases obtained their description has been deferred until more specimens are collected.

Brazier (John, C.M.Z.S.)—Continuation of the Mollusca of the Chevert Expedition, with New Species.—Proc. Lin. Soc. New S. Wales, 1876, i. pp. 283 to 301.

The author enumerates (synonymy and distribution being given) 14 species of *Eulima*, 1 *Leiostraca*, 1 *Stilifer*, 1 *Architectonica*, 4 *Torinia*, 1 *Conus*, 2 *Coronaxis*, 6 *Lithoconus*, 1 *Rhizoconus*, 7 *Chelyconus*, 2 *Cylinder*, 3 *Hermes*, 1 *Strombus* (s.g. *Monodactylus*), 5 *Gallinula*, 3 *Canarium*, 2 *Pterocera*, 1 *Terebellum*, 16 *Cypræa*, 8 *Trivia*, 2 *Pustularia*, 5 *Amphiperas* and 1 *Volva*.

The species described as new are *Eulima nitens* and *E. amabilis*.

The localities are all off New Guinea, the Islands in Torres Straits and the coast of North and Northeast Australia.

Brazier (John, C.M.Z.S.)—Notes on *Lævicardium Beechei*.
—Proc. Lin. Soc. New S. Wales, 1876, i. pp. 306 and 307.

Numerous localities cited—Sooloo Sea; Corean Archipelago; N. E. Australia; Torres Straits; New Caledonia, &c. Description given.

Brazier (John, C.M.Z.S.)—Shells Collected during the Chevert Expedition.—Proc. Lin. Soc. New S. Wales, 1876, i. pp. 311 to 321.

Five species of *Cancellaria* (and its s. g. *Trigonostoma*), 2 *Trichotropis*, 21 *Cerithium*, 5 *Vertagus*, 2 *Triphoris* (and s. g. *Ino*), 1 *Pyrasus*, 1 *Telescopium*, 2 *Cerithidea* and 1 *Pirenella* are enumerated, of which the following are described as new:—*Trichotropis tricarinata*, *T. gracilentia*, *Cerithium abbreviatum*, *C. bicanaliferum* and *C. minimum*. All the localities are in New Guinea, Torres Strait and N. E. Australia.

Brazier (John, C.M.Z.S.)—Continuation of the Mollusca of the Chevert Expedition.—Proc. Lin. Soc. New S. Wales, 1876, i. pp. 362 to 368.

The author enumerates 8 *Littorina* (including s. g. *Tectarius*), 2 *Planaxis*, 1 *Quoyi*, 20 *Rissoina* (many unnamed), and 2 unnamed *Alvaniae*. The new species are *Rissoina effcata*, *R. teres*, *R. pulchella*, *R. inermis*, *R. cardinalis* and *R. inconspicua*. Localities same as all other "Chevert" species.

Brugnone (l'Ab. G.)—**On Chemnitzia pusilla and C. terebellum.**—Osservazioni sulle Chemnitzia pusilla e Chemnitzia terebellum, *Phil.*—Bull. Soc. Mal. Ital. 1876, ii. pp. 210 to 215 and tav. C. fig. 1, 2.

The results of the author's observations are that the *Chemnitzia pusilla* of Philippi is not that of Jeffreys and Hörnes, but another form near *Odostomia lactea* L., and that the species of those two authors ought to be re-named; also that *C. terebellum* of Philippi differs from *C. pusilla* of the same author and has affinity with *Odostomia (Pyrgulina) indistincta* Mont.

Higgins (Rev. Henry H., M.A.) and **Marrat** (F. P.)—**West Indian Mollusca (Argo Expedition).**—Mollusca of the Argo Expedition to the West Indies, 1876. — Liverpool Museum Report, No. 1, 19 pp. and 1 plate.

Lists of mollusca collected at various points on the voyage, given as materials for future investigators.

Madeira (4 univalves); Antigua (31 univalves and 19 bivalves); Barbuda (30 univalves and 4 bivalves); St. Kitt's (2 freshwater and 4 land shells); Dominica (17 univalves, 2 bivalves and 6 land shells); St. Vincent (27 univalves and 2 bivalves); Grenada (1 *Murex*, n. sp.); Trinidad (1 univalve, 3 freshwater and 2 land shells); La Guayra (12 univalves and 1 bivalve); Venezuela (1 *Bulimus*); Caracas (3 land shells); Puerto Cabello (10 univalves and 3 bivalves); Tucacas (42 univalves and 30 bivalves); Santa Marta (28 univalves and 10 bivalves); Point Savanilla (15 univalves and 2 bivalves); Cartagena (1 *Strombus*); Havana (21 univalves, 10 bivalves and 4 land shells); Vera Cruz (19 univalves and 2 bivalves); Nassau (68 univalves and 17 bivalves); Long Key Island (31 univalves and 3 bivalves); Athol Island (16 univalves and 1 bivalve); and Abaco (63 univalves, 3 land shells and 16 bivalves). Two new species are described and figured: *Sconsia Barbudensis* (Barbuda) and *Murex (Chicoreus) imbricatus* (Grenada).

Kobelt (Dr. W.)—Contributions to the Arctic Fauna.—

Beiträge zur arctischen Fauna.—Jahrb. Deuts. Mal. Ges., April 1876, iii. pp. 165 to 180 and 2 plates.

Sipho gracilis and its allies; *S. glaber* Verkrutzen; *Buccinum Finmarkianum* Verk.; *B. parvulum* Verk.; *Bela Kobeiti* Verk.; and *Bela gigas* Verk., are described and figured.

Kobelt (Dr. W.)—Contributions to the Arctic Fauna

(concluded).—Beiträge zur arctischen Fauna (Schluss).—Jahrb. Deuts. Mal. G.s., Oct. 1876, iii. pp. 371 to 373 and plates 3, 4.

Scalaria Loveni A. Adams, *Admete undatocostata* Verkrutzen, and *Natica (Bulbus) flava* Gould, are figured.

Kobelt (Dr. W.)—Catalogue of the Genus Ranella.—

Catalog der Gattung *Ranella Lamarck*.—Jahrb. Deuts. Mal. Ges., Oct. 1876, iii. pp. 323 to 334.

Seven species of *Apollon* (Montfort), 53 of *Ranella* Lam. (em.) 5 of *Eupleura* Stimpson, and 2 species of dubious affinities.

Martens (Prof. Ed. von).—Some West African Shells.—

Ueber einige Conchylien aus Westafrika.—Jahrb. Deuts. Mal. Ges. July 1876, iii. pp. 236 to 249 and plate 9.

Ranella lævigata Lam., *Xenophora crispa* König var., *Nassa limata* Chemn. var. *conferta*, *Micra scrobiculata* Brocchi? *Natica lemniscata* Philippi-Chemn., *Pecten Philippii* Recluz, *Cardium vitellinum* Reeve, *Lucina* sp. and *Nassa semistriata* Brocchi var. *recidiva* are particularly noticed.

Martens (Dr. Ed. von).—Short Geographical Notes.—

Kleine geographische Bemerkungen.—Nachrichtenblatt d. Deuts. Mal. Ges. May 1876, viii. pp. 68 to 72.

The first note relates to Cuming's Caracas, the second to

Conus omaicus, the third to *C. Nussatella*, the fourth to *C. Genuanus*, the fifth to *Nerita Peloronta*, the sixth to Rumph and Schynvoet, and the seventh to various islands named Elizabeth.

Paulucci (Marchesa Marianna).—**Critical Observations on the Species of the Genus Struthiolaria.**—Osservazioni critiche sopra le specie del Genere Struthiolaria, *Lamarck*.—Bull. Soc. Mal. Ital. 1876, ii. pp. 223 to 232.

Schacko (G.).—**Dentition of Struthiolaria.**—Ueber die Zungenbewaffnung der Gattung Struthiolaria.—Jahrb. Deuts. Mal. Ges., Oct. 1876, iii. pp. 317 to 323 and plate ii.

S. costulata Smith, *S. mirabilis* and *S. crenata* are noticed.

Seguenza (Prof. G.).—**Some Mollusks of the Sea of Messina.**—Di alcuni molluschi del Mare di Messina.—Bull. Soc. Mal. Ital. 1876, ii. pp. 62 to 65.

A list of 45 gastropoda, 31 lamellibranchiata, and 6 brachiopoda.

Semper (Otto).—**On the genus Conopleura Hinds.**—Einige Worte mit Beziehung auf Conopleura Hinds.—Jahrb. Deuts. Mal. Ges. April 1876, iii. pp. 161 to 164.

Tapparone Canefri (Cav. Cesare).—**On some new or badly known Marine Shells from the Mauritius.**—Intorno ad alcuni specie di Testacei Marini mal conosciute o nuove dell' Isola Maurizio.—Bull. Soc. Mal. Ital. 1876, ii. pp. 241 to 244.

Murex (*Chicoreus*) *fenestratus* Chemn., *Pisania luctuosa*, n. sp., *Tritonium pachycheilos*, n. sp., *T. mauritianum*, n. sp., and *Ranella Paulucciana*, n. sp., are described.

Vest (W. von).—**On Adacna. Monodacna and Didacna and allied forms.**—Ueber Adacna, Monodacna und verwandte Formen.—Jahrb. Deuts. Mal. Ges., Oct. 1876, iii. pp. 289 to 317 and plate 10.

A new genus, *Donacardium*, is instituted for the reception of *Cardium donaciforme* Schroet., from Philippines and Celebes; and *C. australiense* Reeve, *Didacna trigonoides* Pallas (the Caspian Sea), *D. crassa* Eichw., *Monodacna caspia* Eichw., *M. pseudocardia* Desh., *M. colorata* Eichw., *M. edentula* Pallas, *Adacna plicata* Eichw., *A. vitrea* Eichw., *A. læviuscula* Eichw., are noticed, all from the neighborhood of the Caspian Sea and Pontus.

Woods (Rev. J. E. Tenison, F.L.S.)—**On some Tasmanian Patellidæ.**—Proc. Roy. Soc. Tasmania 1876, pp. 43 to 58.

A description of the anatomy and physiology of some Tasmanian *Patellidæ*, especially of *Patella limbata* Philippi, *P. ustulata* Reeve, *Acmaea costata* Sow., *A. septiformis* Quoy and Gaim., *A. Flammea* Quoy and Gaim., *A. crucis*, n. sp., *A. marmorata* Woods, *Siphonaria denticulata* Quoy and Gaim., and *S. Diemenensis* Quoy and Gaim.

Woods (Rev. J. E. Tenison, F.L.S.)—**On a New Genus of Nudibranchiata.**—Proc. Roy. Soc. Tasmania 1876, p. 28.

The name is *Allportia*, and the genus is erected for the reception of a new species, *A. expansa*, Tasmania.

Woods (Rev. J. E. Tenison).—**On some New Tasmanian Marine Shells.**—Proc. Roy. Soc. Tasmania 1876, pp. 131 to 159.

Murex (*Pteronotus*) *zonatus*, *Trophon assisi*, *Ranella epitrema*, *Mitra Franciscana*, *Mitra granatina*, *Marginella stanislas*, *Conus Carmeli*, *Columbella Xavierana*, *Columbella miltostoma*, *Ancillaria marginata*, *Cominella tenuicostata*, *Purpura propinqua*, *Pleurotoma Philipineri*, *Drillia incrusta*, *D. minuta*, *D. Weldiana*, *Mangelia St. Gallæ*, *M. De Salesii*, *Daphnella Tasmanica*, *D. varix*, *Siphonalia castanea*, *S. pulchra*, *Cerithiopsis albosutura*, *Turritella*

Tasmanica, *Dentalium Tasmaniensis*, *D. Weldiana*, *Phasianella pulchella*, *Turbo* (*Lunella*) *Simsoni*, *Carinidea Tasmanica*, *Gibbula multicarinata*, *G. dolorosa*, *G. Weldii*, *Margarita* (*Minolia*) *Tasmanica*, *Clanculus Dominicana*, *C. Raphaeli*, *C. angeli*, *Diloma australis*, *Monilea turbinata*, *Ethalia Tasmanica*, *Adeorbis picta*, *Cyclostrema Josephi*, *C. micra*, *C. Weldii*, *C. susonis*, *C. spinosa*, *C. immaculata*, *Liotia incerta*, *Fossarus Tasmanicus*, *F. bulimoides*, *Scissurella Atkinsoni*, *Parthenia Tasmanica*, *Adis tristriata*, *Syrnola Michaeli*, *Elusa bifasciata*, *Turbonilla Macleayana*, *Styloptygma Tasmanica*, *Stylifer Tasmanica*, *Rissoa* (*Alvania*?) *chelostoma*, *R. Agnewi*, *R. cyclostoma* and var. *rosea*, *R. (Setia) siennæ*, *R. melanura*, *R. (Cingula) Atkinsoni*, *R. angeli*, *R. (Ceratia) Maccoyi*, *Rissoina Flindersii*, *R. St. Clareæ*, *R. concatenata*, *Diala tessellata*, *Tornatina mariæ*, *Ampullarina minuta*, *Acmaea Petterdi*, *A. alba*, *Tugalia Tasmanica*, *Nucula minuta*, *Limopsis cancellata*, *Mytilus latus* Lam. nov. var.? *M. crassus*, *Diplodonta Tasmanica*, *Semele Warburtoni*, *Gouldia Tasmanica*, *Kellia Atkinsoni*, *Gasterochaena Tasmanica*, are described as new.

Woods (Rev. J. E. Tenison, F.L.S.)—**Observations on the Genus *Risella*.**—Proc. Lin. Soc. N. S. Wales 1876, i. pp. 242 to 249.

Nine species have been regarded as belonging to this genus, which Mr. Woods reduces in number, regarding *R. lutea* as a sexual variety of *R. plana* Quoy, and *R. melanostoma*, *R. aurata* and *R. nana* as sexual or accidental varieties.

NOTES ON THE SPECIES OF THE GENUS *SCUTUS*.

By EDGAR A. SMITH, F.Z.S.

Much confusion exists respecting the nomenclature of the few species contained in this genus and it will be my endeavor in the present paper to rectify it as completely as possible. In this I am considerably aided in having in the Museum the actual specimens upon which Blainville wrote his treatise in the 'Bulletin des Sciences de la Société philomatique,' and also those monographed by A. Adams in the 'Proceedings of the Zoological Society,' and figured by Sowerby in the 'Thesaurus Conchylionum' and 'Conchologia Iconica.' Besides these I have examined a good series of animals preserved in spirits.

The mistakes respecting the names of the species commenced with Montfort, who unnecessarily altered *Patella ambigua* of Chemnitz to *Scutus antipodes*. Probably the fact of placing the species in a new genus was to him sufficient reason for renaming it.

Blainville next adds to the list of errors by referring a *Patella elongata* to Chemnitz. I presume he had in his mind that author's *P. ambigua*, which however according to my judgment is a distinct species from that described by Blainville, but is the same as that named *P. breviculus* by the latter author in the above-named paper. The name *elongata* had moreover been already employed for a fossil species by Lamarck, who in his 'Animaux sans Vertèbres,' 1822, changed Blainville's name (*elongatus*) to *australis*. This however was quite unnecessary, as Donovan in 'Rees' Encyclopedia,' 1820, had already well figured this species under the name of *Patella anatina*.

Gray, perceiving that Sowerby in his genera figured a shell under the name of *Emarginula breviculus*, which indeed was not the true species described by Blainville under that name, gives to

that shell the name of *Parmophorus elegans* ('Annals of Philosophy' 1825) not perceiving that it was merely a variety of the old Linnean *Patella unguis*. Quoy and Gaimard next pursue the erroneous course. In the first place they figure a very uncommon broad form of the abundant *Parmophorus australis* as a typical example, and secondly create two unnecessary so-called species, the one (*P. convexus*) being the ordinary form of *Patella australis* = *anatinus* Donovan, and the other (*P. imbricatus*) a variety of *P. unguis*.

Reeve in his 'Conchologia Systematica' figures a shell under the name of *Parmophorus corrugatus* which likewise is only another form of *P. unguis*.

A. Adams in the 'Proceedings of the Zoological Society,' 1851, in a monograph of this genus reprinted in the 'Annals and Magazine of Natural History,' besides giving very confused synonymy of the species, describes one very inadequately as *Scutus angustatus*, also in my opinion merely a broad form of the Linnean species, having a subcentral apex. He also attributed a *Parmophorus tumidus* to Quoy and Gaimard, who never characterized the species under that name but as *P. convexus*.

Under *Scutus unguis* L. he includes three species—1, *P. unguis* proper; 2 *P. ambigua* Chemnitz = *P. antipodes* Montf.; 3, *P. australis* Lam. = *P. elongatus* Blainv.

Under *Scutus elongatus* Lam., a fossil species, he places the *Emarginula elongata* of Sowerby's 'Genera,' which is a totally distinct shell, being in fact the *Scutus anatinus*.

The monograph by the same author in Sowerby's 'Thesaurus Conchyliorum' is replete with misconceptions. His idea of *P. breviculus* Blainv. and *P. unguis* L. are utterly erroneous. The shell he figures under the former name is *P. unguis* var. = *angustatus* A. Ad., and that under the latter is the broadish form of *Scutus anatinus*, as is also the specimen represented by figure 10 on the same plate.

He places together *P. elongatus* Lam., *P. laevis* Blainv., and his own *Scutus angustatus*, remarking that the species is "also known fossil." Here is one chain of mistakes. The *P. elongatus* of Lamarck is the same species as *P. laevis* of Blainville, is only found in the fossil state and is quite distinct from any recent one. *Scutus angustatus* too is a totally different species from that figured (*S. anatinus*), being as above stated only a variety of *S. unguis*. Figure 21 on plate xiv. is said to represent *elongatus* Lam., whilst in reality only a form of the Linnean species is delineated.

Sowerby in the 'Conchologia Iconica' has to a great extent copied the errors of the Thesaurus' monograph. His notion of *S. unguis* and *S. breviculus* corresponds with that of A. Adams. He however correctly ascribes *P. elongatus* to Blainville, but unfortunately locates *P. australis* Lam., *P. laevis* Bl. and *Scutus angustatus* A. Ad. among the synonymy. The first is the same as Blainville's species, but the two others are totally distinct; the one being a fossil, the equivalent of Lamarck's *P. elongata* as already stated, and the latter a variety of *P. unguis*.

In repeating A. Adams's error of ascribing a *P. tumidus* to Quoy and Gaimard, the confusion is varied by Sowerby in considering it the same as *breviculus* Bl., whilst A. Adams was of opinion that the latter might be a questionable variety of the former. They are however totally distinct shells.

The animal of *Scutus* was first described by Blainville in the 'Bulletin des Sciences par la Société philomatique de Paris' 1817. He there described two specimens from the collection of the British Museum which are still in a fair state of preservation. MM. Quoy and Gaimard in the 'Voyage de l'Astrolabe' give further anatomical details. The only additional information published respecting the animal consists of the description of the dentition of *S. anatinus* (= *Parmophorus Australis*) by J. Hogg in the 'Trans. Royal Microscopical Society,' and also that of *Scutus*

unguis (= *corrugatus* Reeve) by Tapparone-Canefri in the 'Malacologia del Viaggio della Magenta.' According to Hogg's figures the odontophore has a broad central tooth with four much narrower ones on each side of it, and adjacent to these are the pleuræ, the innermost one being strong with two stout terminal denticles of which the inner is much the more formidable. The rest of them are very fine in comparison and hooked at the ends. Although the same detail is indifferently portrayed in the 'Astrolabe,' pl. 69, f. 10, yet MM. Quoy and Gaimard assert in the text, vol. iii, p. 317, "crochets sur sept rangées."

I myself have examined the odontophores of several specimens of *Scutus unguis*, *S. ambiguus* and *S. anatinus*, and with the exception of size I can perceive no appreciable differences. I therefore conclude that the figure given by Tapparone-Canefri is not quite accurate which represents the arrangement thus: central tooth very large, with seven smaller ones on each side which gradually lessen in size outwardly; beyond these a very strong pointed prong-like tooth, and again without this a border of a fringe-like aspect.

The color of the animal in this genus is generally black or nearly so, but is subject to variation. Dr. Tapparone-Canefri describes a Japanese specimen of *Scutus unguis* (var. *corrugatus* Reeve) as white with the sides of the foot blotched with black. Another from the Red Sea, which I believe most probably belongs to the same species, is said by Rüppel to be black above with the foot grey beneath. Another in the British Museum from Zanzibar is of a uniform pinkish-buff tinge, and a second also in the museum and likewise of this species is of a whitish or yellowish color blotched with dark grey upon the mantle and sides of the foot which is uniform buff below.

What specific importance to attach to these differences of color it is difficult to determine, for as is well known alcoholic specimens of mollusca give but a faint idea of the splendid colors

of the living creatures. Besides the black pigment which stains the mantle and foot of this genus is easily removed and a white tissue beneath presents itself. How much of this coloring may have been removed in the above-mentioned examples we do not know, and it is quite possible that when living all may have had a completely sombre exterior.

A LIST OF THE DESCRIBED SPECIES.

- 1764—*unguis* L. (*Patella*) = *Scutus unguis*.
- 1795—*ambiguus* Chem. (*Patella*) = *S. ambiguus*.
- 1810—*antipodes* Montfort (*Scutus*) = *S. ambiguus*.
- 1817—*elongatus* Blain. (*Parmophorus*) = *S. anatinus*.
- 1817—*breviculus* Blain. (*Parmophorus*) = *S. ambiguus*.
- 1817—*granulatus* Blain. (*Parmophorus*) = *S. unguis*.
- 1820—*anatinus* Donovan (*Patella*) = *S. anatinus*.
- 1822—*australis* Lam. (*Parmophorus*) = *S. anatinus*.
- 1825—*elegans* Gray (*Parmophorus*) = *S. unguis*.
- 1834—*convexus* Quoy & Gaim. (*Parmophorus*) = *S. anatinus*.
- 1834—*imbricatus* Quoy & Gaim. (*Parmophorus*) = *S. unguis*.
- 1842—*corrugatus* Reeve (*Parmophorus*) = *S. unguis*.
- 1851—*angustatus* A. Ad. (*Scutus*) = *S. unguis*.
- 1851—*Ruppeli* Phil. (*Parmophorus*) = *S. unguis*.
- 1851—*emarginatus* Phil. (*Parmophorus*) = *S. unguis*.

Species known to me only by brief descriptions :—

- 1825—*fissurella* Blain. (*Parmophorus*).
- 1825—*sinensis* Blain. (*Parmophorus*).
- 1825—*fragilis* Blain. (*Parmophorus*).
- 1837—*gibbosus* Anton (*Parmophorus*).

Shells described as *Parmophorus* and *Scutus* but belonging to other genera :—

1835—**patelloideus** Cantraine (*Parmophorus*) is a **Tylodina**.

1842—**intermedius** Reeve (*Parmophorus*) is a **Tugalia**.

1874—**abnormis** Nevill, is the dorsal plate of a **Pholas**.*

I. *Scutus anatinus* Donovan.

a. Typical form. Shell elongate, narrow.

Patella anatina Donovan. Rees' Encyclopedia, 1820, v., Natural History Plates—Conchology, pl. xvi.

Parmophorus elongatus Blainv. Bull. Sci. Soc. Philom., 1817, p. 25; Dict. Sci. Nat., xxxvii., p. 557; Malacol., pl. 48, f. 2-2a.

Emarginula elongata Sow. Gen. rec. foss. Shells, f. 1.

Scutus elongatus A. Ad. Sowerby's Thes., iii., pl. 248, f. 1-2. Sowerby's Con. Icon., xvii., pl. 1, f. 1a-b.

S. unguis A. Ad., part (non L.) Proc. Zool. Soc. 1851, p. 221.

Parmophorus australis Lam. An. s. Vert, ed. I., 1822, vi., Part II., p. 5; ed. II., vii., p. 579. Cuvier's Règne Anim., ed. Deshayes, pl. 65, f. 1-1a. Chenu, Manuel de Conch. i., p. 373, f. 2801. Reeve, Conch. Syst., pl. 139, f. 2-3. Hogg, Trans. Microscop. Soc. 1868, xvi., pl. 12, f. 57 (dentition).

P. convexus Quoy and Gaim. Voy. Astrolabe, iii., p. 322, pl. lxi., f. 5-16.

Scutus tumidus A. Ad. (non Quoy and Gaim.) P.Z.S., 1851, p. 222 (part).

b. var. Shell proportionally broader.

Patella unguis Schumacher, part (non L.) Syst. Vers. Test., pl. xxii, f. a-b.

* This valve was described and figured by Walch in 'Der Naturforscher' 1779, Stuck 30, p. 86, pl. 3, f. 15, under the name of *Scutum dacicum*.

Parmophorus australis Quoy and Gaim., l.c., iii., p. 321,
pl. 69, f. 1—4.

Scutus elongatus A. Ad. in Sow. Thes., iii., pl. 249, f. 10.
Sow. Con. Icon., xvii., pl. 1, f. 1d.

S. unguis Sow. (non L.) Con. Icon. f., 5b (? 5a).

Habitat—Western Harbour (Quoy & Gaim.) Port Jackson,
Sydney (Angas & Brit. Mus.)

Var. King George's Sound (Quoy & Gaim.) Freemantle and
Swan River (Brit. Mus.)

The common form of this species appears to have been recorded only from the east coast of Australia at Port Jackson and Sydney, and from the southeast coast at Western Harbour, which according to Quoy and Gaimard (Astrolabe, iii., p. 275), is situated in Bass's Straits.

The broad variety on the contrary as far as at present known is restricted to localities on the west and southwest coasts, King George's Sound being in the latter region and Freemantle and Swan River in the former. With the exception of the greater width of the shell there is apparently no distinction between the two forms. MM. Quoy and Gaimard remark upon the convex arched upper surface of their species (*convexus*), stating that it rests upon the two extremities. This I conclude is not absolutely correct, for even their figure represents the species as decidedly elevated at the posterior end. This I may say is most unusual, for as a rule it is the anterior extremity where the sinuation in the margin exists which assumes an upward inclination.

2. *Scutus ambiguus* Chemnitz.

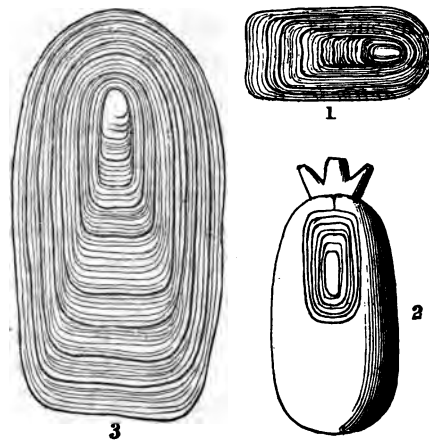
Patella ambigua Chemn. Conch. Cab., xi., pp. 178 and 181,
f. 1918. Wood, Index Test., pl. 38, f. 84.

Scutus antipodes Montfort. Conch. Syst., ii., p. 58—9.

Parmophorus breviculus Blainv. Bull. Sci. Soc. Philom.
1817, p. 28. Dict. Sci. Nat., xxxvii., p. 558. Lamarck,
Anim. s. Vert., ed. 2, vii., p. 579.

Scutus unguis H. & A. Adams (non L.) Genera, iii., pl. 51,
f. 10a.

Habitat—New Zealand (Montfort and Brit. Mus., received
from five different persons).



This species, as stated by him, was described by Chemnitz from a specimen in the collection of Schumacher. His description runs thus—"testa alba, oblonga, scutiformi, planiuscula, *marginè postico rotundato, antico quasi truncato, vertice submucronato.*" He was ignorant of the locality whence it was obtained but presumed it came from East Indian Seas. The above description exactly suits the figure (Con. Cab., xi., f. 1918).

Schumacher in his 'Essai Nouv. Syst. habit vers test.' p. 179, says that Chemnitz's figure is not altogether exact, also remarking "j'en puis juger avec certitude, comme je possède le même exemplaire qu' il a fait dessiner. . . La grande figure a, b, c, est le même exemplaire dont Mr. Chemnitz a donné la figure."

Notwithstanding Schumacher's affirmation I feel convinced that he had *not* before him the actual Chemnitzian type.

To me it seems most improbable, nay almost impossible, that the latter author should describe both in Latin and German the anterior end "as if truncated," and that his artist should also draw that part of the specimen likewise truncate if indeed it were not so.

Schumacher's figure represents the broad form of *S. anatinus* with both ends pretty equally rounded. It is also larger and the sculpture, as far as one may judge, different from that of Chemnitz's specimen. The figure of this species in Montfort's work, under the name of *S. antipodes*, represents a very large specimen, considerably larger than any I have seen, yet having the same truncate character at the anterior end with a broad yet distinct sinuation. Another feature worth noticing is that when the shell rests on the lateral margins both ends are almost always somewhat raised. It is easily distinguishable from *S. anatinus* by its considerably shorter form and the squarish truncate anterior end.

Parmophorus breviculus of Blainville is I believe the same species as that described by Chemnitz. At all events his type being in the museum we are enabled to know with certainty which species he had before him. He described the animal as generally shorter in all parts and refers to the proportional shortness of the shell, which only covers the anterior part of the body, whilst in *Scutus anatinus* on the contrary it covers nearly the entire length. The species is exclusively found in New Zealand as far as I can ascertain. Montfort gives this locality, which is an additional reason for concluding that the shell he figured belonged to this species, and besides this he quotes Chemnitz's figure as representing his own species.

Fig. 1 of the above wood cut gives a dorsal view of the animal, showing the position of the shell. Fig. 2 is the type specimen described by Blainville as *Parmophorus breviculus*. Fig. 3 a larger example.

3. *Scutus unguis* L.

- a. Typical form. Shell slightly narrowing anteriorly, only slightly corrugated.

Patella unguis L. Mus. Ulricæ, p. 69; Syst. Nat., ed. 12, p. 1260 (part). Schumacher, Syst. Vers. Test., p. 179 (part), pl. 22, f. d, e. Hanley, Ipsa Linn. Conch., p. 5, 24 pl. 3, f. 4.

Scutus unguis A. Ad. (part). Proc. Zool. Soc. 1851, p. 221 (part).

- b. var. Shell also narrowing in front and much wrinkled.

Parmophorus granulatus Blainv. Bull. Sci. Soc. Phil. 1817, p. 28. Dict. Sci. Nat., xxxvii, p. 558. Lamarck, An. s. Vert., ed. 2, vii, p. 579.

Scutus granulatus A. Ad. Sowerby's Thes. Conch., iii, pl. 248, f. 3, pl. 249, f. 20; Sow. Conch. Icon., xvii, f. 2a—b.

Parmophorus imbricatus Quoy and Gaimard. Astrolabe, iii, p. 323, pl. 69, f. 17—18.

Scutus imbricatus A. Ad. P.Z.S., 1851, p. 222.

- c. var. Shell with subparallel sides, also considerably corrugated.

Parmophorus corrugatus Reeve. Conch. Syst., pl. 139, f. 1.

Scutus corrugatus A. Ad. P.Z.S., 1851, p. 222; Thesaurus, pl. 248, f. 4, pl. 249 f. 7. Sow. Con. Icon., xvii, f. 3a—b. Tapparone-Canefri, Malac. Viag. Majenta, p. 70.

Parmophorus japonicus Canefri (non Reeve); Canefri, l.c., pl. 2, f. 8 (dentition).

P. elegans Gray. Annals of Philos., 1825, ix, p. 139.

Emarginula brevicula Sow. (non *Parmophorus breviculus* Blainv.) Gen. Rec. foss. Shells, f. 2.

Emarginula sp. Savigny. Descrip. Egypt, Atlas, Zoologie, Coquilles, pl. 1, f. 10.

Pharmophorus breviculus Sow. (non Blainv.) Chenu, Manuel de Conch., vol. i., f. 2800.

d. var. Shell broad, wrinkled towards the apex, which is sub-central.

Scutus angustatus A. Ad. P. Z. S., 1851, p. 222.

S. breviculus A. Ad., part (non Blainv.) Thes. pl. 249, f. 6.
Sow. Con. Icon., pl. 2, f. 4.

Scutus elongatus A. Ad., part (non Blainv.) Thes. Con., pl. 249, f. 21; Sowb. l. c. f. 1c.

Parmophorus granulatus Reeve. Conch. Syst., pl. 139, f. 4.

Scutus granulatus A. Ad. P. Z. S., 1851, p. 221, part.

e. var.? Shell deeply emarginate anteriorly.

P. emarginatus Philippi. Zeitschr. Malac., 1851, p. 89.

f. var.? "Shell ovate, smooth."

Parmophorus Rüppeli Philippi, l. c. p. 89.

= *P. australis* Rüppel (non Lamarck). Atlas Reise in nörd. Afrika, pl. x., f. 5a-c (animal and shell).

Habitat—Amboina (L.), New Ireland (Quoy and Gaim.), Japan (Reeve and Canefri), China and Red Sea (Philippi), Cape of Good Hope, Zanzibar, Red Sea, Bombay, Philippines, Port Essington and Moreton Bay (Brit. Mus.)

This species was described by Linnæus in the 'Museum Ulricæ' and again characterized in the 12th edition of the 'Systema Naturæ.' In the former work he cites a single figure in Rumphius's 'D'Amboinsche Rariteitkamer,' pl. 40, f. 1, which indeed represents a species of *Scutus*, but which species it is impossible to determine with certainty, as the figure is very bad. It represents a shell of a very narrow shape, but this form may have been produced by the sides of the specimen being broken away or filed off. In the 'Systema,' besides this figure, another is referred to in Petiver's 'Gazophylacium,' pl. 32, f. 9. This is a drawing of a species of *Lingula*.

Had not the type, which I have seen, in the Linnean Cabinet, been preserved the species would have had to be abandoned as unrecognisable. However, the shell marked with the number (767) of the 'Systema' definitely decides which species Linnæus really had before him. This is figured by Hanley in his 'Ipsa Linnæi Conchylia,' pl. iii, f. 4. The conclusion arrived at by Chemnitz ('Der Naturforscher,' 1787, stück 22, p. 23) that this species belonged to the genus *Pinna*, rests upon Linne's reference to Petiver's figure, which being that of a *Lingula* has somewhat the form of a *Pinna*. It is about an inch in length, narrows just a little anteriorly and the sculpture consists of imbricating concentric lamellæ of growth with undulating edges, and scarcely displays any of the corrugation which in some specimens extends over the entire surface as in the typical *granulatus*. This was described by Blainville from a young shell, for he says that it is smaller than his *breviculus*, the type of which in the Museum measures exactly one inch. It does not however follow that the fullgrown *granulatus* would be entirely "granulous," for many specimens are corrugated at the apex on a surface which we may presume equals the size of Blainville's type, yet on the rest of the shell show scarcely any or no traces of this corrugation particularly towards the margin.

The variety *corrugatus* as figured by Reeve is peculiar for its subparallel lateral margins, a feature not at all constant, for in the museum series of specimens the closest gradation from this form to that which narrows considerably anteriorly is observable.

P. imbricatus Quoy and Gaim., judging from the figure in the 'Astrolabe,' is a trifle narrower than the Linnean type and the posterior end when viewed laterally appears to be up-curved somewhat, a character as equally gradational in a series of specimens as the form of the outline, the width in proportion to the length, and the position of the apex.

S. angustatus A. Ad., was described from specimens in the Cumington Collection. At the present time I can find no shell with that name attached to it, but one tablet with two specimens upon it is labelled *radiata* A. Ad. These I take to be the types of *angustatus*, and presume that the label is merely an error of memory or a lapsus calami. This supposition is to some extent confirmed by A. Adams, who places his species as a synonym of (*elongatus*) the true *Scutus anatinus*, and the shell figured pl. xiv., f. 21, is one of those which I presume are his types. The apex is more anterior than in the typical *unguis* and the form is a trifle broader.



HELIX HORTENSIS VAR. *ARENICOLA*.

By J. S. GIBBONS, M.B.

This very distinct variety appears to have been ignored by Jeffreys and other writers on British land shells. Some time ago I received Bristol specimens from Miss Hele, under the name of *H. fasciata-pellucida*, agreeing exactly with shells collected at the original station near Aberdeen. As there can be no doubt about its occurring in other places besides the two mentioned above, I reproduce Macgillivray's description :—"Shell subglobose, very "thin, diaphanous, hyaline, with five opaque white bands, the "epidermis thin, pale sulphur-yellow ; the peristome thin, with "an internal opaque white rib." (Moll. Aberdeen, p. 83). I have not been able to detect the faint alliaceous odour mentioned by Macgillivray.

August 20th, 1878.



MISCELLANEOUS NOTES.

ZOÖLOGICAL LABORATORY AT NEWPORT, RHODE ISLAND, U.S.—The last report of the Harvard College Museum of Comparative Zoology includes an admirable photograph and plan and an account of the new laboratory established by Prof. Alex. Agassiz for the purpose of furthering systematic study of zoology, especially from the embryological and microscopical side. Newport seems to be rather favorably situated in respect of its position and the facilities it affords for the study of marine forms of life.

WATFORD NATURAL HISTORY SOCIETY AND HERTFORDSHIRE FIELD CLUB.—We have received a set of the Transactions of this Society which appears to be in an unusually flourishing condition, and the character of the papers printed appears to be on the whole decidedly good. We note however that conchology does not appear to have a place in the studies of the members, although this might have been expected of a Society which at its anniversary meeting in February last elected Dr. J. Gwyn Jeffreys to the presidential chair for the year 1879.

A NEW CATALOGUE OF THE GENUS *PARTULA*.—Dr. W. D. Hartman, of Westchester, Pennsylvania, informs us that he is at present engaged on a catalogue of the genus *Partula*, including their localities, when and where the descriptions were published, and the dates of publication. This is a preliminary to a synonymic catalogue and a revision of the genus, for the compilation of which he has unusual facilities, for in addition to his own fine collection he has been favored with duplicates of the Pease collection from the Museum of Comparative Zoology at Cambridge, Mass.; also specimens from Mr. R. F. Geale, the Smithsonian Institution, and many private collections.

MR. ANDREW GARRETT.—We understand that this distinguished conchologist has fixed his head-quarters this year in the conchologists' paradise, the Solomon Islands, for a three years' exploration of the surrounding groups, such as the New Hebrides, Australia, &c.

VERNACULAR NAMES AND FOLK-LORE.—The recent perusal of a provisional Index to a glossary of fish-names, by Mr. Thomas Satchell, to be published by the English Dialect Society, has suggested to us the desirability of recording in the pages of this journal the vernacular and local names given to the mollusca and their shells, as well as notes on popular beliefs and superstitions connected with the various species. We shall be glad if our readers will favor us from time to time with such notes, even if only detached and brief articles.

MUSCATINE CONCHOLOGICAL CLUB.—From a history of the county of Muscatine, Iowa, with which Prof. Witter has favored us, we see that conchology is honored with special facilities for its cultivation in the form of a club established for the study of mollusca, more especially those of Muscatine County. The club has been in existence about two years. Its present officers are: President, F. M. Witter; Secretary, Wm. Roach; Treasurer, Jno. Fogerty. Meetings are held weekly during a part of the winter, at which papers are read on the species of mollusca found near Muscatine, each member taking such species as he may be best able to illustrate by specimens. No membership fee is charged and there are no dues, but a fund from voluntary contribution is accumulating for the purpose of publishing at an early day a full annotated list of the living mollusks of the district. Our readers will no doubt wish, as we do, prosperity to this unpretentious and unambitious organization.

DESCRIPTION OF *AMPHIPEPLEA PETTERDI*,
NEW SPECIES FROM NEW GUINEA.

[Read before the Conchological Society of Great Britain and Ireland, July 31st, 1879.]

BY WILLIAM NELSON,
President of the Society.

This fine shell was found by Mr. W. F. Petterd during his exploration of New Guinea, at Port Moresby, and I have great pleasure in associating the name of the discoverer with the species. It is allied in form to *L. Strangei* Ad. and Angas, from Australia.

Shell ovately subglobose, light horn color, thin; spire short; penultimate whorl expanded laterally to the right, giving to the apical whorls, which are minute and pointed, an appearance of being placed toward the left side; whorls 5, last whorl large, oblong; aperture large, auriform; outer lip sinuous, anteriorly rounded, slightly reflected near its junction with the columella; columella twisted; inner lip thin; suture deep; striae oblique, close and irregular.

Length 25 mill., breadth 17 mill.

Aperture 17 mill., breadth 12 mill.

Habitat—Port Moresby, New Guinea.

ACHATINA ACICULA MULL. IN THE ISLE OF WIGHT.

BY C. ASHFORD.

In the excellent list of land and freshwater shells of this island drawn up by Messrs. Guyon, Hambrough and More for the Zoological Section of 'Venables' Guide,' our little *Achatina* does not occur. Within the last few days I have found it, though not alive, on the crest of an old chalk pit on the northern slope of Afton Down, near Freshwater. It occurs where the rapid descent of the hillside is broken into tiny cliffs six to ten inches high, exposing the soil down to the chalk. I see in my notes that I took this shell, July 1872, in a similar locality on the Chalk Downs, two miles south of Petersfield, Hants.

BIBLIOGRAPHY.

 1876.

PALÆONTOLOGY.

Bellardi (Prof. Luigi).—**New Fossil Genus of Bullidæ from Piedmont and Liguria.**—Descrizione di un nuovo genere della famiglia delle Bullide fossile del terreno pliocenico inferiore del Piemonte e della Liguria.—Bull. Soc. Mal. Ital., 1876, ii., pp. 207 to 210 and tav. C., f. 5, 6, 7, 8.

The new genus is named *Sabatia*, instituted for the reception of *S. Isseli* Bellardi (= *Bulla plicata* Bellardi, non Deshayes).

Brugnone (l'Abate G.).—**Two New Fossils from Altavilla, Sicily.**—Due specie fossili nuove di Altavilla.—Bull. Soc. Mal. Ital. 1876, ii., pp. 216 to 218 and tav. C., f. 3, 4.

Pleurotoma (*Drillia*) *pseudosigma* and *Mitra De-Stefanii*.

Conrad (T. A.).—**Note on a Cirripede of the Californian Miocene, with remarks on Fossil Shells.**—Proc. Ac. Nat. Sci. Philad., 1876, pp. 273 to 275.

Helix strangulata Ad. (Virginia), *Inoceramus* Sow., *Aphrodina* Conrad, *Idonearca* Conrad, *Haplothærus*, *Anchura*, *Etea* are noticed.

Deby (Julien).—**Fossil Shells of West Flanders.**—Note sur l'Argile des Polders, suivie d'une liste de fossiles qui y ont été observés dans la Flandre Occidentale.—Ann. Soc. Mal. Belg., 1876, xi., pp. 69 to 90.

This paper is mainly devoted to Foraminifera and Diatoms, and only includes a list of 14 mollusks.

Gabb (W.M.)—Notes on American Crêtaceous Fossils, with Descriptions of some New Species.—Proc. Ac. Nat. Sci. Philad., 1876, pp. 276 to 324 and plate 17.

This paper is in one sense a geographical list of the fossils of Georgia, and includes the names of 4 *Nautilus*, 2 *Ammonites*, 1 *Hamites*, 1 *Fusus* (a new subgenus, *Exilifusus*), 3 *Surcula*, 1 *Drillia*, 2 *Lagena* (s.g. of *Tritonium*), 1 *Nassa*, 1 *Fasciolaria*, 3 *Cryptorhytis*, (s.g. of *Fasciolaria*), 6 *Pyropsis*, 3 *Volutoderma* (new genus created from *Fulgoraria*), 1 *Leioderma*, 6 *Volutomorpha* (new genus), 1 *Rostellites*, 1 *Ptychosita* (new genus connecting *Ficulopsis* and *Ficus*), 2 *Gyrodes*, 1 *Amauropsis*, 2 *Lunatia*, 3 *Opalia* (s.g. of *Scala*), 2 *Anchura*, 1 *Aporrhais*, 1 *Turbinopsis*, 1 *Gyrotropis* (new genus allied to *Trichotropis*), 1 *Turritella*, 1 *Laxispira* (new genus), 1 *Bivonia*, 1 *Eudoptygma* (new genus allied to *Phorus*), 2 *Ataphrus*, 1 *Xylophagella* (s.g. of *Turnus*), 2 *Martesia*, 1 *Leptosolen*, 1 *Legumen*, 1 *Periplomya*, 1 *Solyma* (not *Solemya*), 1 *Pholadomya*, 1 *Cymbophora*, 1 *Schizodesma*, 1 *Tenea*, 1 *Tellina*, 1 *Gari*, 1 *Peronæoderma*, 2 *Cyprimeria*, 3 *Trachycardium* (s.g. of *Cardium*), 1 *Granocardium* (ditto), 3 *Crassatella*, 1 *Anthonya*, 1 *Opis*, 1 *Lithophaga*, 1 *Inoceramus*, 3 *Trigonia*, 1 *Venilia*, 7 *Idonearca*, 1 *Nemodon*, 1 *Trigonarca*, 1 *Axinæa*, 2 *Nucula*, 1 *Nuculana*, 1 *Camptonectes*, 1 *Sincyclonema*, *Neitheia*, 1 *Anomia*, 1 *Paranomia*, 7 *Ostrea*, 2 *Gryphæa* and 1 *Exogyra*. The new species are—*Nautilus Bryani*, *Exilifusus Kerri*, *Surcula strigosa*, *Drillia Georgiana*, *Lagena edentatum*, *Nassa globosa*, *Cryptorhytis crassicosta*, *C. Kerri*, *C. obliquicostata*, *Ptychosyca inornata*, *Opalia Thomasi*, *O. cyclostoma*, *A. bicarinata*, *Gyrotropis squamosus*, *Laxispira lumbricalis*, *Bivonia cretacea*, *Ataphrus Kerri*, *Pholadomya Littlei*, *Schizodesma appressa*, *Tellinella Georgiana*, *Gari elliptica*, *Peronæoderma Georgiana*, *Cyprimeria torta*, *Trigonia angulicosta*, *Idonearca Corolinensis*, *I. Alabamensis*, *I. Littlei*, *Trigonarca cuneata*, *Neitheia complexicosta*, *Ostrea Bryanii*, *O. Littlei* and *O. exogyrella*.

Guppy (R. J. L.)—Miocene Fossil Shells of Jamaica.—Liste des Mollusques, etc., miocènes de la Jamaïque, d'après M. R. J. L. Guppy.—Ann. Soc. Mal. Bel., 1876, xi., pp. 101 to 103.

Seventy-one species of *Gastropoda*, one of *Pteropoda*, 27 of *Conchifera* and one *Polyzoon* are enumerated.

Rutot (A.)—Belgian Fossil Shells.—Description de la Faune de l'Oligocène Inférieur de Belgique (Terrain Inférieur de Dumont).—Ann. Soc. Mal. Belg., Feb. 1876, pp. 7 to 67 and plates I. to IV.

The Mollusks are treated of at pages 31 to the end. The species specially mentioned include *Strombus canalis* var. *plana* Beyr., *Rostellaria ampla* Soland., *R. excelsa* Gieb., *Murex plicatocarinatus* Gieb., *M. brevicauda* Hébert, *M. tristichus* Beyr., *M. Deshayesi* var. *Prisca* Rutot, *M. Deshayesi* Duch. and Nyst., *M. fusiformis* Nyst., *Triton Flandricum* var. *expansum* Sow., var. *postera* von Koenen, typical form of *T. Flandricum* de Kon., *Typhis pungens* Sol., and *T. fistulosa* var. *prisca* Rutot. The paper is elaborately worked out, and copious synonymy and references given to each species. Diagnostic indications are also given.

Rutot (A.)—Description de la *Rostellaria robusta*, Rutot, Fossile de l'argile de Londres et de l'étage Bruxellien des environs de Bruxelles.—Ann. Soc. Mal. Belg., 1876, xi., 105 to 109 and plate v.

The species is diagnosed from *R. ampla* Brand., and *R. macroptera* Lamarck.

Seguenza (Prof. G.)—Palæontological Studies of the Malacological Fauna of the pliocene sediments deposited at great depths.—Studi paleontologici sulla fauna malacologica dei sedimenti pliocenici depositatisi a grandi profondità.—Bull. Soc. Mal. Ital. 1876, pp. 17 to 49 and plates.

Prof. Seguenza continues his former paper [see Bibliog., p. 207 of present vol.] by a synoptical table of the littoral and

submarine deposits of the various zones of the Pliocene of Italy, giving the shells characteristic of each. This is followed by short notices of the localities explored, and the paper concludes with a systematic enumeration of the mollusca. There are of *Argonauta* 1, *Hyalæa* 9, *Cleodora* 7, *Spirialis* 4, and *Embolus* 3. The following are described as new:—*Hyalæa Scillæ*, *H. Calatabianensis* and *Embolus elatus*; while several others are figured.

Stefani (Carlo de).—Pliocene Mollusca of Tuscany.—*Notizie sopra alcuni Molluschi Pliocenici del Poder Nuovo presso Monterufoli.*—*Bull. Soc. Mal. Ital.*, 1876, ii., pp. 5 to 16.

The locality is near Volterra in the province of Pisa. Forty-nine species are enumerated of which 33 are recent, while 16 only are of extinct forms. The genera are—*Trivia*, *Erato*, *Marginella*, *Mitra*, *Columbella*, *Nassa*, *Murex*, *Typhits*, *Fusus*, *Pisania*, *Conus*, *Cerithium*, *Cerithiopsis*, *Triforis*, *Cylichina*, *Odostomia*, *Natica*, *Solarium*, *Fossarus*, *Lacuna*, *Rissoa*, *Alvania*, *Cingula*, *Rissoina*, *Turritella*, *Vermetus*, *Siliquaria*, *Crepidula*, *Capulus*, *Turbo*, *Trochus*, *Fissurella*, *Dentalium*, *Circe*, *Chama*, *Pectunculus* (the author discusses the species of this genus at very great length), *Arca*, *Argiope* and *Terebratula*.

Vincent (G.).—Fossil Mollusca of the "etage Landenien inferieur" of Belgium.—*Description de la Faune de l'Etage Landenien inférieur de Belgique.*—*Ann. Soc. Mal. Bel.*, 1876, xi., pp. 111 to 160 and plates 6 to 10.

After an introduction, a geological account of the strata, and a comparison with French and English equivalent formations, the author describes numerous fishes and crustacea and the following mollusca:—*Beloptera Levesquei* D'Orb. and Fér., *Nautilus (Aturia) zic-zac* J. Sow., *Rostellaria malaisei* Vincent, *Triton fenestratum* Vincent, *Ficula Smithii* J. Sow., *Fusus Landinensis* Vincent, *F. Colbeaui* Vincent, *F. Wansinensis* Vinc., *Pseudoliva antiqua* Vinc., *Ancillaria* sp.?, *Pleurotoma Corneti* Vinc., *P. Gosseleti* Vinc., *P.*

Devalquei Vinc., *P. Balstoni* Vinc., *P. Loozi* Vinc., *P. Rutoti* Vinc., *P. incompta* Vinc., *P. Dollfusi* Vinc., *P. Ortliebi* Vinc., *P. Ha'lezi* Vinc., *P. sub-duchasteli* Vinc., *P. ? volutaformis* Vinc., *Mitra? sp.?*, *Natica Woodi?* Desh., 3 other species, *Turbonilla ingens* Vinc., *Cerithium Broecki* Vinc., *C. quinquecinctum* Vinc., *C. Morrisi* Vinc., *C. Rutoti* Vinc., *Chenopus dispar* Desh., *C. Thielensi* Vinc., *Turritella compta* Desh., *Scalaria Angresiana* De Ryckholt, *Solarium Landinense*, Vinc., *Turbo quinquecarinatus* Vinc., a species of *Pleurotomaria*, *Dentalium breve* Desh., *D. Landinense* Vinc., and *Tornatella Parisiensis* Desh.

White (Chas. A., M.D.)—**Description of New Species of Fossils from Palæozoic rocks of Iowa.**—Proc. Acad. Nat. Sci. Philad., 1876, pp. 27 to 34.

Seven new species are described: *Stricklandinia Castellana* (Brachiopoda), *Paracyclus Sabini* and *Alloresina Marionensis* (Conchifera), *Bellerophon Bournani*, *Euomphalus Springvalensis* (Gastropoda), *Conularia Molaris* (Pteropoda), *Cyrtoceras dictyum* (Cephalopoda).

Woods (Rev. J. E. Tenison, F.L.S.)—**Australian Tertiary Fossil Shells.**—"Further notes on the Tertiary marine beds of Table Cape, by R. M. Johnston," including Mr. Woods' remarks. — Proc. Roy. Soc. Tasmania, 1876, pp. 79 to 90.

A large number of the shells found are mentioned and their geological bearings discussed. These remarks are followed by a "Comparative Table showing distribution of Australian marine shells, &c."

Woods (Rev. J. E. Tenison, F.L.S.)—**Notes on the Fossils referred to in the foregoing paper.**—Loc. cit. pp. 91 to 115.

Murex eyrei, *Cassis sufflatus*, *Fusus Tateana*, *F. transenna*, *F. Johnstonii*, *Voluta M' Coyi*, *Terebra additoides*, *Australium (Calcar)*

Flindersii, A. (C.) *ornatissimum*, *Delphinula tetragonostoma*, *Zizyphinus Blaxlandii*, *Liotia lamellosa*, *Margarita Keckwickii*, *Trochus Josephi*, *Thalotia alternata*, *Solarium* (*Torinia*) *gibbuloides*, *Gibbula crassigranosa*, *G. æquisulcata*, *Turbo Etheridgii*, *Syrnola bifasciata*, *Turritella Warburtonii*, *T. Sturtii*, *Tenagodus oclusus*, *Vermetus conohelix*, *Rissoa Stevensiana*, *Rissoina varicifera*, *R. Johnstoni*, *Turbonilla pagoda*, *T. liræcostata*, *Eulimella subulata* Donovan, *Actæon scrobiculatus*, *Cylichna arachis* Quoy, *Liotia discoidea* Reeve, *Fissurella concatenata* Crosse, *Emarginula transenna*, *Pleurotoma pullulascens*, *P. sandleroides*, *P. paracantha*, *Daphnella columbelloides*, *P. Johnstonii*, *Daphnella gracillima*, *D. tenuisculpta*, *Mangelia gracililirata*, *Buccinum fragile*, *Triton minimum*, *Cominella cancellata*, *C. lyræcostata*, *Thala marginata*, *Marginella octoplicata*, *M. Strombiformis*, *M. Wentworthii*, *Trivia europæa* Montf., *Columbella cainozoica*, *C. Oxleyi*, *Natica vixumbilicata*, *Cucullæa cainozoica*, *Nucula tumida*, *Leda crebre-costata*, *Cardita gracilicostata*, *Lima Bassii*, *L. (Limatula) subauriculata* Montf., *Tellina cainozoica*, *Chione propinqua*, *Venus* (*Chione*) *cainozoica*, *Chama lamellifera*, *Rissoina Tateana*, *Gibbula Clarkei*.

—:O:—

MISCELLANEOUS PAPERS.

Binney (W. G.)—On the Lingual Dentition, Jaw, and Genitalia of Carelia, Onchidella and other Pulmonata.—Proc. Ac. Nat. Sci. Philad., 1876, pp. 183 to 192, and plate 6.

Macrocyclus sportella Gld., *Zonites inornatus* Say, *Z. fuliginosus* Griff., *Z. (?) Bermudensis* Pfr., *Limax Hewstoni* J. G. Cooper, *L. campestris* Binney var. *occidentalis*, *Onchidella borealis* Dall, *Ariolimax Columbianus* Gld., *Binneya notabilis* W. G. Binney, *Carelia bicolor* Joy, *Microphysa incrustata* Poey, *Triodopsis inflecta* Say, *Turricula tuberculosa* Conr., *Helix monodon* Rackett, *Polygyra Postelliana* Bland, *P. Dorfeuilleana* Lea, *P. avara* Say, *Caracolus*

Sageon Beck., *Mesodon major* Binn., *Aglaja fidelis* Gray, *Arionta Mormonum* Pfr., *A. sequicola* J. G. Cooper, *A. Californiensis* Lea, *A. Dupetitthouarsi* Desh., *Glyptostoma Newberryanum* W. G. B., *Bulimulus Dormani* W. G. B., *B. Edwardsi* Mor. and *Succinea ovalis* Gould (not Say), have their details figured and noticed.

Vanden Broeck ()—**Biographical notice of Gustave Collin.**—Bull. des. Séances, Soc. Mal. Belg., 1876, pp. xl. to xlv.

M. Collin was born at Brussels in 1853, and attached himself specially to the study of *Limneidae*, for a monograph of which he accumulated a large amount of material, which after his death in 1876 passed into the possession of the Belgian Malacological Society. A list of his papers is given by M. Vanden Broeck.

Brooks (W. K., Ph.D.)—**Embryology of Salpa.**—Proc. Boston Soc. Nat. Hist., 1876, xviii., pp. 193 to 199 and plate.

Brooks (W. K., Ph.D.)—**The Affinity of the Mollusca and Molluscoida.**—Proc. Bost. Soc. Nat. Hist., 1876, xviii., pp. 225 to 236.

The author enters at some length into the discussion of various proposed arrangements, and dissents from Prof. Huxley's view of the distinct and annelidian ancestry of the *Pteropoda* and *Dentalium*, as introducing a difficulty as great as that which it removes.

Clessin (S.)—**Species versus Varieties.**—Was ist Art, was Varietät?—Jahrb. Deuts. Mal. Ges., April 1876, iii., pp. 155 to 161.

Dall (W. H.)—On the Marine Faunal Regions of the North Pacific; an introductory note to the report on Alaskan Hydroids by Mr. Clark.—Proc. Ac. Nat. Sci. Philad., 1876, pp. 205 to 208; also published at Washington, Dec. 1876, as part of Vol. I. of the 'Scientific Results of the Exploration of Alaska.'

Mr. Dall finds that Mr. Clark's researches on the hydroids confirm his own views published in 1873 as to the faunal regions of the Alaskan coast and re-states those views. He considers that the coast of Alaska and Northwest America from Monterey, California, north and west, may be divided into three faunæ, viz. :—

I. The OREGONIAN fauna, extending from Monterey to the Shumagin Islands; II. the ALEUTIAN fauna, from those islands westward throughout the Aleutian chain and northward to the winter-line of floating ice in Bering Sea; III. the ARCTIC fauna, a well-recognized one, limited southwards by the winter-line of floating ice. Mr. Dall in the course of further remarks reiterates his view of 1868 that temperature, and that alone, is the great factor in determining the limits of marine faunæ, all other factors being merely subsidiary.

Dall (W. H.)—On the Extrusion of the Seminal Products in Limpets, with some remarks on the Phylogeny of the Docoglossa.—Proc. Ac. Nat. Sci. Phil., 1876, pp. 239 to 247; also published Dec. 1876, by the Smithsonian Institution as portion of Vol. I. of the 'Scientific Results of the Exploration of Alaska.'

Includes some additional notes on the genera of limpets and concludes with a genealogical tree of the Docoglossa.

Duprey (E.)—Shells of the Littoral Zone, and Fresh-water and Land Shells in Jersey.—Ann. and Mag. Nat. Hist., Oct. 1876, 4th series, xviii.

Ihering (Dr. Hermann von).—**Proposed Natural System of Mollusca.**—Versuch eines natürlichen Systemes der Mollusken.—Jahrb. Deutsch. Mal. Ges., April 1876, pp. 97 to 148 and 9 woodcuts.

Dr. Ihering's proposed classification is very briefly shown as follows:—

Vermes.

Phylum: AMPHINEURA Ihering.

Class I.: APLACOPHORA Ihering.

Includes two families: *Chætodermata* Ihering (gen. *Chætoderma* Lov.) and *Neomeniadae* Ihering (gen. *Neomenia* Tullberg).

Class II.: PLACOPHORA Ihering.

Includes one family: *Chitonidae* (Fér.) Guild.

Molluska Cuv.

1st Phylum: ACEPHALA Cuv.

(=*Lamellibranchiata* Blv.)

2nd Phylum: SOLENOCONCHÆ Lac.-Duth.

(=*Scaphopoda* Bronn.)

3rd Phylum: ARTHROCOCHLIDES Ihering.

(=*Gastropoda prosobranchiata* M. Edw. p.)

Class I.: CHIASTONEURA Ihering.

Order I.: *Zeugobranchia* Ihering.

Families *Fissurellidae* Risso, *Haliotidae* Flem., and *Pleurotomaridae* D'Orb.

Order II.: *Anisobranchia* Ihering.

Suborder I.: Patelloidea (Docoglossa Trosch. p.) Ihering.

Families *Tecturidae* Gray, *Patellidae* Gray, and *Lepetidae* Gray.

Suborder II.: Rhipidoglossa (Trosch. p.) Ihering.

Family *Trochidae* D'Orb.

Suborder III.: Tænioglossa (Trosch. p.) Ihering.

Families *Littorinidæ* Gray, *Rissoellidæ* Ad., *Rissoidæ* (Gray) Trosch., *Cyclostomacea* (Pfr.) Trosch., *Cyclotacea* Trosch., *Pomaticea* Trosch., *Aciculidæ* (Gray) Kfst., *Paludinidæ* Gray, *Melaniidæ* Gray, *Tubulibranchia* Cuv., *Turritellidæ* (Clark) Ad., and ? *Pyramidellidæ* Gray.

Class II.: ORTHONEURA Ihering.

Order I.: *Rostrifera* Ihering.

Suborder I.: Rhipidoglossa (Trosch. p.) Ihering.

Families *Neritacea* Lam., *Helicinacea* Pfr. & *Proserpinacea* Pfr.

Suborder II.: Ptenoglossa Trosch.

Families *Janthinidæ* Ad., *Solariidæ* Kfst., and ? *Scalariidæ* (Brod.) Kfst.

Suborder III.: Tænioglossa (Trosch. p.) Ihering.

Families *Ampullariacea* Guild., *Valvatidæ* Gray, *Capuloidea* Cuv., ? *Phoridæ* Gray, *Sigaretina* Trosch., *Marseniadæ* Bgh., *Cypræidæ* Gray, *Cerithiacea* (Fér.) Mke., *Alata* Lam., and *Aporrhaidæ* Gray.

Order II.: *Proboscidifera* Ihering.

Suborder I.: Tænioglossa (Trosch. p.) Ihering.

Families *Velutinidæ* Ad., *Sycotypidæ* Ad., *Doliidæ* Ad., *Cassidea* (D'Orb.) Gray, *Tritoniidæ* Ad., and *Ranellacea* Trosch.

Suborder II.: Toxoglossa Trosch.

Families *Pleurotomacea* (Hinds) Lov., *Cancellariidæ* Ad., *Terebridæ* Ad., and *Conoidea* Latr.

Suborder III.: Rhachiglossa (Gray) Trosch.

Families *Volutidæ* Gray, *Harpidæ* (Ad.) Trosch., *Olividæ* (D'Orb.) Trosch., *Mitridæ* Ad., *Strigatellacea* Trosch., *Fasciolariidæ* Ad., *Columbellidæ* (Ad.) Trosch., *Buccinidæ* (Ad. p.) Carus, *Nassacea* Trosch., *Purpuracea* Trosch., and *Muricidæ* Trosch.

Order III.: *Heteropoda* Lam.

4th Phylum: PLATYCOCHLIDES Ihering.

Class I.: ICHNOPODA Ihering.

Order I.: *Protocochlides* Ihering.

Families *Rhodopidæ* Ihering (gen. *Rhodope* Köll.), *Tethydæ* (A. & H.) Ihering (gen. *Tethys* L.), and *Melibidæ* Ihering (gen. *Melibe* Rang).

Order II.: *Phanerobranchia* Ihering.

Families *Tritoniadæ* A. and H., *Scylladæ* A. and H., *Dendronotidæ* A. and H., *Bornellidæ* Bgh., *Heroidæ* (Gray) Ad., *Dotonidæ* Ad., *Æolididæ* Bgh. (incl. *Proctonotidæ*), *Phyllirroidæ* Ad., *Dorididæ* Bgh., *Onchidorididæ* Ad., *Triopidæ* Ad., *Corambidæ* Bgh., *Doriopsidæ* Bgh., *Phyllidiadæ* A. and H., *Pleurophyllidiadæ* A. and H., and *Pleuroleuridæ* Bgh.

Order III.: *Sacoglossa* Ihering.

Families *Limapontiadæ* Bgh., *Elysiadæ* Bgh., *Phyllobranchidæ* Bgh., *Plakobranchidæ* Bgh., *Hermæadæ* Bgh., and *Lophocercidæ* Ad.

Order IV.: *Steganobranchia* (Ihering).

(= *Tectibranchia* Cuv. p.)

Families *Runcinidæ* Ad., *Siphonariidæ* Ad., *Pleurobranchidæ* (Fér.) Ad., *Aplysiidæ* (D'Orb.) Ad., *Philinidæ* Ad., *Bullidæ* Ad., *Cylichnidæ* Ad., *Aplustridæ* Ad., and *Actæonidæ* Ad.

Order V.: *Branchiopneusta* Ihering.

(= *Pulmonata basommatophora* A. Schmidt.)

Families *Amphibolidæ* Ad., *Gadiniidæ* Ad., *Limnoidæ* Ad., and *Auriculacea* Blv.

Order VI.: *Nephropneusta* Ihering.

(= *Pulmonata stylommatophora* A. Schmidt, *Helicidæ* Gray).

Class II.: PTEROPODA Cuv.

Class III.: CEPHALOPODA Cuv.

Kobelt (Dr. W.)—Geographical Distribution of Land and Freshwater Mollusca.—Die Geographische Verbreitung der Binnen-mollusken.—A Reprint from ——— March 4, 1876, pp. 75 to 104.

The author in a lengthened introduction unfolds his views of the subdivision of the Palæarctic Region, recognizing four parallel zones, the Arctic-Boreal, the Germanic, the Alpine, and the Mediterranean. He also discusses the world-provinces generally, and proceeds to give various catalogues, viz. :—Tibet 19 (of which 9 are European), the Polar Regions 46, the Germanic Province 221, the Italian peninsula 316, Sicily 229, Malta 36, Sardinia 9, Corsica 100, Crete 40, Rhodes 13, Cyprus 51, and the Crimea 42 species. This paper will be indispensable (together with its predecessors) to all who are working out the distribution of land and freshwater mollusca.

Lavis (H. J. J.)—List of Land and Freshwater Mollusca collected at Berry Wood, Hertfordshire.—Trans. Watf. Nat. Hist. Soc., &c., 1876, i., p. xvii.

A *Clausilia*, a *Cochlicopa*, 3 *Helices*, 2 *Lymnæa*, a *Physa*, 2 *Planorbis* and 2 *Zonites* were collected at an excursion of the Society.

Meyer (F.)—Obituary Notice of Dr. H. C. Kuster.—Ein Gedenkblatt für Dr. H. C. Küster.—Nachrichtenblatt d. Deuts. Mal. Ges., July 1876, viii., 81 to 86.

The subject of this notice was born at Erlangen Feb. 14th, 1807, and died at Bamberg on the 17th of April, 1876.

Morse (Edward S.)—On a Diminutive Form of *Buccinum undatum* ♂ :—Case of Natural Selection.—Proc. Bost. Soc. Nat. Hist. 1876, xviii., pp. 284 to 287 and woodcuts.

The exceptional peculiarity of the environment of this species in the Bay of Eastport, U.S., seems most distinctly to have produced a local variation affecting the male only.

Seibert (Hermann).—**On the Behaviour during Propagation of the Banded Varieties of *Helix nemoralis* and *H. hortensis*.**—Ueber das Verhalten der Bänder-varietäten von *Helix hortensis* M. und *H. nemoralis* L. bei der Fortpflanzung. — *Nachrichtenblatt d. Deuts. Mal. Ges.*, May 1876, viii., pp. 65 to 67.

Strobel (Prof. Pellegrino).—**The Relations between the Nature of the Soil and the Distribution of Land and Freshwater Mollusca.**—Saggio sui rapporti esistenti fra la Natura del Suolo e la distribuzione dei Molluschi terrestri e d'acqua dolce.—Reprint from the *Atti della Società Italiana di Scienze Naturali*, 1876, xix., fasc. 1, 8vo., 26 pages.

In this paper Prof. Strobel discusses at length the influence—direct and indirect—exercised by the nature of the soil, whether geologically, chemically, mechanically, physically, geognostically, or botanically considered. At the end of the paper is given a list of 20 mollusks of European origin, which are now acclimatized in other parts of the world.

Watson (Rev. R. Boog, F.R.S.E., F.G.S.)—**Notes on Lowe's MS. List of Webb's Type Shells from the Canaries (1829), and on the Annotations thereon in D'Orbigny (1839) and Lowe (1860).**—*Journal of the Linnean Society, Zoology*, vol. 12, pp. 516 to 524, Sept. 19, 1876.

Wiegmann (F.)—**On the Development of the Jaw and Lingual Ribbons in Landsnails.**—Beitrag zur Entwicklungsgeschichte der Reibe-platte und des Kiefers bei den Landschnecken. — *Jahrb. Deuts. Mal. Ges.*, July 1876, iii., pp. 193 to 235 and plates 5, 6.

Limax agrestis, *Helix arbustorum*, *H. hortensis*, *H. rubiginosa* Ziegl., *H. hispida* L., *H. bidens* Chem., *H. pomatia* L., *Pupa muscorum*, *Limax maximus*, *L. agrestis*, *Vitrina pellucida*, *H. fruticum*, *Arion hortensis*, *A. empiricum*, *Limax variegatus*, *Succinea putris*, *S. Pfeifferi*, *Hyalina Draparnaldi*, *H. lapicida*, *Bulinus obscurus*, *B. montanus*, *Pupa minutissima*, *P. muscorum* and *Clausilia laminata*.

HELIX PULCHELLA AND *H. CELLARIA* OF MÜLLER,
FOUND IN AUSTRALIA;
WITH NOTES ON THEIR DISTRIBUTION.

By J. BRAZIER, C.M.Z.S., &c., &c.

Helix pulchella Müller. Verm. ii., p. 30, N. 232.

H. Alexandræ Cox. Catalogue of Australian Land Shells, 1864,
p. 35; Monograph Austral. Land Shells, 1868, p. 61, pl. vi.,
fig. 1.

Habitat—Petersham; Marrickville; Glebe; Craigend; Darling
Point, near Sydney, New South Wales.

The specimens collected at Petersham were found under old
brick heaps, at the other localities under old mats, bags, boots and
other rubbish collected about gardens.

At Norfolk Island, the first place where I collected it, it was in the
old gaol yard of that once notorious island, found under the head
of an old cask; a few days after in a heavy rain I procured a large
quantity under partly decayed cornstalks in the garden of Mr.
Arthur Quintal; a few I obtained on my way across from Sydney
Bay to the Cascades, under a decayed log; it is also found in
various parts of Tasmania, and recently at Chatsworth, New South
Wales, under decayed garden rubbish. If this well-known Euro-
pean species is mixed up with the Australian, Tasmanian, and
Norfolk Island specimens there is not the least difference between
them. I have taken specimens from various localities and arranged
them on glass with the aperture to the eye; both the aperture and
the umbilicus are the same. The question is easily answered—
How did they get to Australia, Tasmania and Norfolk Island? By
being brought in boxes with plants from Europe. European plants
were introduced into Norfolk Island, Tasmania and New South
Wales. Found in almost every little garden.

The *Helix cellaria* Müller, is also found in Sydney under water casks in the yards about the city, and in cellars, crawling on the walls after heavy rains. I have collected it in New Zealand, near Mount Eden, just out of the town of Auckland.

The *H. Sydneyensis* Cox, Cat. Aust. Land Shells, 1864, p. 37, is only a synonym of the well-known *H. cellaria*; it is also found in various parts of Tasmania.



PUPA UMBILICATA DRAP., IN SOUTH AFRICA.

By J. S. GIBBONS, M.B.

In June I found this species abundant, in garden hedges, about Cape Town. I suspect it is a somewhat recent introduction, as I am not aware it has been noticed before. Associated with it were the three other introduced species, *Helix pulchella*, *H. aspersa* and *Hyalina cellaria*.



HELIX ROTUNDATA VAR. *ALBA* NEAR HARROGATE.

By JOHN W. TAYLOR.

When collecting a few weeks ago at Pannal near Harrogate, in company with Mr. W. Nelson, I found a very nice specimen of this variety. It may also be remarked that several specimens were obtained by Mr. Nelson and myself in the spring of 1878 at Seacroft near Leeds.



ANCYLUS FLUVIATILIS VAR. *ALBIDA* AT ROUND-HAY, NEAR LEEDS.

By W. NELSON.

Last year in the Public Park at Roundhay I accidentally discovered a small colony of this pretty variety. The area they occupy is somewhat circumscribed, and no example of the normal form is associated with them, though found abundantly at no great distance. No reason appears to exist to account for the isolation of the variety, no physical barriers preventing the extension of the limits of either form.



PROCEEDINGS OF THE CONCHOLOGICAL SOCIETY
OF GREAT BRITAIN AND IRELAND.

1879.

48th Meeting.

Held at the Society's room, Leopold Square, Leeds.

Mr. Robert Scharff, vice-president, in the chair.

DONATION TO THE LIBRARY.

The following was announced and thanks voted to the donor:—

Nachrichtsblatt der deutschen Malakozoologischen Gesellschaft

Elfter Jahrgang, No. 6 and 7, June—July, 1879.

[Mr. Robert Scharff.]

DONATION TO THE COLLECTION.

The following were announced and thanks voted to the donor:—

The following shells from various localities:—

[Mr. J. S. Gibbons, M.B.]

SOUTH AFRICAN.

Helix globulus Müll. Cape Town; on sand-flats near the sea.*H. Kraussi* Pfr. Mossel Bay.*H. Capensis* Pfr. Cape Town; on grass.*H. variplicata* Bens. Cape Town.*Buliminus meridionalis* Pfr. Algoa Bay.*Pupa fontana* Krs. Mossel Bay.*P. Pottebergensis* Krs. Algoa Bay.*Ancylus Kafir* Krs. Algoa Bay.*Cyclophorus convexiusculus* Pfr. Algoa Bay.*Unio Caffer* Krs. Algoa Bay.

EAST AFRICAN.

Cyclostomus calcareus Sow. Mozambique; subfossil, now extinct on island. (Vide *J. C.*, ii., p. 145).

Meladomus olivaceus Sow. Zanzibar.

Cerithidea decollata L. Zanzibar.

ANTILLES.

Helix Cubensis Pfr. Habana, Cuba (*J. C.*, ii., p. 130).

H. paludosa Pfr. Habana, Cuba (*J. C.*, ii., p. 130).

H. acuta Lam. Jamaica.

Bulimulus exilis Gm. St. Thomas.

B. sepulchralis Poey. Habana.

Stenogyra octona Ch. Habana, Cuba.

„ „ Puerto Plata, St. Domingo.

„ „ St. Thomas.

Cylindrella costata Guild. Barbadoes.

Strophia mumia Brug. Havannah.

Pupa pellucida Pfr. Havannah.

Melampus coffea L. Havannah.

Limnæa Cubensis Pfr. Havannah (*J. C.*, ii., p. 134).

Physa ventricosa Guild. St. Thomas.

Megalomastoma Antillarum Sow. St. Thomas.

Helicina substriata Gray. Barbadoes.

TRINIDAD, DEMERARA AND SPANISH MAIN.

Hyalina decolorata Drouët. Georgetown.

Orthalicus undatus Brug. Santa Martha.

Cionella Gloynii, sp. nov. (*J. C.*, ii., 135). Curaçao.

Cylindrella Trinitaria Pfr. Trinidad.

„ „ var. Sabanilla.

Strophia uva L. Curaçao.

Tudora megacheila P. and M. Curaçao.

Ampullaria effusa Müll. Georgetown.

MEXICAN.

Helix griseola Pfr. Vera Cruz.

Melania spinifera C. B. Ads.? ? Vera Cruz.

BRAZILIAN.

Helix similaris Fér. Rio Janeiro.

Bulimulus durus Spix. Pernambuco.

Ancylus Moricandi D'Orb. Bahia.

ATLANTIC ISLANDS, &c.

Hyalina cellaria Müll. St. Helena (*J. C.*, i., 367).

Helix pulchella Müll. Madeira; Funchal.

H. Maderensis Lowe. Madeira; Funchal.

H. undata Lowe. Madeira; Funchal.

H. lactea Müll. Lisbon.

H. acuta Müll. Lisbon.

Pupa umbilicata Drap. Madeira.

Succinea sp. indet. Monte Video, S. America.

The Secretary announced that various other donations were offered, notably from Mr. C. Ashford.

NEW MEMBERS.

The Rev. H. Milnes of Winster, near Derby, and Mr. Henry Laver, F.L.S., of Colchester were proposed for membership.

SHELLS FROM CARNFORTH.

MR. ROBERT SCHARFF exhibited specimens of shells collected in a dead and bleached condition in great heaps at the margins of freshwater ponds, including *Limnæa peregra*, *Bythinia tentaculata*, *Valvata cristata*, *V. piscinalis*, *Sphærium corneum* and a species of *Pisidium*.

MIOCENE SHELLS FROM FRANCE.

MR. ROBERT SCHARFF exhibited the following species of Miocene (Middle) shells collected at Sancats near Bordeaux:—*Planorbis solidus*, *P. declivis*, *Helix Girondica*; specimens of which were distributed among the members present.

USE OF SHELL FISH AS FOOD.

Mr. BENJAMIN HOLGATE, F.G.S., exhibited shells of *Purpura lapillus* and *Helix aspersa* collected in the refuse heaps of the ancient British town of Cissbury in Sussex, evidently having been used as food.

YORKSHIRE SHELLS.

Messrs. J. W. TAYLOR and W. DENISON ROEBUCK exhibited a number of shells collected about Spofforth and Barlby, and distributed them amongst the members present.

THE SOCIETY'S COLLECTIONS.

It was pointed out that the very rapid increase in the collections had brought prominently forward the necessity of providing adequate accommodation for their reception. After a brief discussion the matter was referred to the consideration of the next meeting.

NEXT MEETING.

On the invitation of Mr. Robert Scharff it was unanimously resolved that the next meeting be held at his residence at Bradford.

*ZONITES EXCAVATUS* BEAN, AT NEWLAY.

By JOHN W. TAYLOR.

This species is exceedingly abundant in the bleak stony wood known by the name of Bramley Fall Wood, at Newlay, near Leeds. It is associated with *Helix rotundata*, which is here of a small size with a somewhat raised spire. *Zonites excavatus* is found in several other places around Leeds, all situate on the coal measures.



DESCRIPTION OF *HELIX PETTERDIANA*,
NEW SPECIES.

BY JOHN W. TAYLOR.

Shell with an open umbilicus, in which the whorls are freely exposed, broadly-discoidal; yellowish, occasionally white, marked very irregularly with dashes and waved streaks of reddish-chestnut, marking often quite absent; spire very faintly elevated, finely, rather closely striated with waved riblets above and below, interspaces under the lens discussate, extending over the riblets; whorls $4\frac{1}{2}$, prominently rounded, last scarcely descending in front; peristome acute; aperture almost round; margins closely approaching, not dilated.

Diameter, greatest 6, least 5; height, $2\frac{1}{4}$ mil.

Variety *albida*.—White, without markings.

Habitat—Circular Head, Table Cape, Emu Bay, Torquay, Launceston, Mount Wellington, islands in Bass Straits, and Fernshaw (Victoria).

A very pretty species, having a close resemblance to *H. MacDonaldi* and a remote one to *H. Tasmaniae* and *H. Tamarensis*. To the former it is so closely allied that it may be but a large variety; from the two latter it may be distinguished by attending to the diagnosis. At Circular Head it is in great abundance on the rocks around the "Nut," gregarious under entangled masses of plants in company with *H. caesus*, *H. Weldii*, and *H. pictilis*. So plentiful is it that thousands can be literally scraped together from the surface of a single block of rock, on lifting the accumulated mass of plants and leaves. No other species are found in such great numbers as the present and its companion *H. caesus*. There is a New Zealand shell having some resemblance to it, but quite specifically distinct. The nearest Australian species is *H. Murrayana*, but that differs in several respects.

Around Launceston and Hobart Town it is smaller and more sparingly met with, although it is anything but rare. In this species the embryonal whorls are striated as the rest of the shell, not smooth as in *H. MacDonaldi*.

I have great pleasure in dedicating this species to Mr. Petterd, its discoverer, who has done so much to increase our knowledge of the shells of the Australian fauna.



CONTRIBUTIONS TO A BETTER KNOWLEDGE OF THE FRESHWATER SHELLS OF QUEENSLAND.

No. I.—DESCRIPTIONS OF THREE NEW *PHYSÆ*.

BY WM. NELSON AND J. W. TAYLOR.

(Read before the Conchological Society of Great Britain and Ireland, July 31, 1879.)

In the series of papers of which the present is the first, we propose to enumerate the species of freshwater shells already known to inhabit Queensland, and from time to time to describe and figure such species as come under our notice that appear to be new or previously undescribed.

We trust in this useful work to receive the aid and co-operation of such of our antipodean collaborators as feel an interest in the elucidation of the freshwater fauna of this important district ; such aid will be thankfully received and duly acknowledged.

The first arrivals are from our zealous and esteemed correspondent Mr. W. F. Petterd, and amongst them are several species previously unknown to science, of which descriptions, &c. are appended.

Physa Brisbaneica.—Shell fusiform, horn color, rather solid ; spire produced, acuminate ; whorls 6, convex, regularly and slowly increasing in size, the last whorl exceeding in size the rest of the shell, deeply and regularly striate by the lines of growth ; suture deep ; inner lip thin ; columellar fold not prominent ;

aperture rather narrow, longer than the spire, anteriorly rounded and thickened at intervals by the marks of periodic growth.

Length 17, breadth 8 mill.

Length of aperture 10, breadth 4 mill.

Habitat—Brisbane River, Queensland.

This species was found by Mr. W. F. Petterd.

Physa Beddomei.—Shell sinistral, thin, narrow, acuminate; whorls 8, sloping, the last about half the total length of the shell; spire acuminate produced, tapering to a fine point; suture moderately deep; aperture small, narrow, anteriorly rounded, outer margin slightly produced; columella fold a little twisted; inner lip thickish, a thin white rib situate at some little distance from the mouth.

Length 9, breadth 8 mill. Aperture 8, breadth 5 mill.

Habitat—Townsville (Coxen and Beddome) and Rapid Bay, Queensland (W. T. Bednall).

This species bears some resemblance to *P. pyramidata* Sow., but is quite distinct. We have also received specimens of the same species from Mr. Bednall of Adelaide.

Physa fusiformis.—Shell sinistral, narrow, irregularly and finely striate, narrow, subfusiform, horn color, rather solid; spire elevated, acuminate; whorls 5, gradually increasing in size, the last equaling two-thirds of the shell; suture deep; aperture pyriform, rather longer than spire; outer lip produced, anteriorly angular, with a reddish-brown rib just within the aperture; columellar fold rather short.

Length 12 mill.

Aperture 7 mill.

Habitat—Richmond River, New South Wales.



MISCELLANEOUS NOTES.

THE LECKENBY COLLECTION.—The fine and unique collection of British Shells formed by the late Mr. Leckenby of Scarborough has, we understand, been purchased by Mr. Damon of Weymouth.

ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA—CONCHOLOGICAL SECTION.—We see by the last annual report (that for 1878) that this section has made progress, and a list of numerous additions to its conchological cabinets is given. The officers chosen for 1879 are:—W. S. W. Ruschenberger, director; John Ford, vice-director; S. R. Roberts, recorder; E. R. Beadle, secretary; Wm. M. Mactier, treasurer; Edw. J. Nolan, librarian; and Geo. W. Tryon, junior.

SCIENCE IN MUSCATINE, IOWA.—Through the kindness of Prof. F. M. Witter we have received a number of papers from which we see that science in general, and conchology in particular, seem to be in a flourishing state in this rising city of the West. The Academy of Science, virtually begun in 1870, but nominally founded in December 1877, is possessed of a handsome new building and the beginnings of a museum, partly the property of the Academy, partly loans from individuals. An account of the opening of the new hall and of Professor Witter's address on the occasion is given in the 'Muscatine Daily Tribune' of Thursday, July 3, 1879.

PROCEEDINGS OF THE CONCHOLOGICAL SOCIETY
OF GREAT BRITAIN AND IRELAND.

1879.

49th Meeting.

Held at the house of Mr. Robert Scharff, 79, St. Mary's Terrace, Manningham, Bradford.

At the request of the president (Mr. W. Nelson) Mr. R. Scharff, vice-president, occupied the chair.

NEW MEMBERS.

The following gentlemen were unanimously elected members of the Society:—

Mr. Henry Laver, M.R.C.S., F.L.S., &c., 1, Trinity Street, Colchester.

Rev. Herbert Milnes, Winster Rectory, Derby.

RECENT AND FOSSIL SHELLS.

Mr. ROBT. SCHARFF exhibited the collection of recent and fossil shells formed by him during his residence in Bordeaux, and in the course of his tours through Eastern and Southern France. Amongst the most notable specimens *Pupa Strobili* var. *Scharffi* Boettg., may be mentioned. This was discovered by Mr. Scharff in the alluvium at Bordeaux, and has been named and described by Dr. Boettger of Frankfort. Several rare and beautiful varieties of *H. splendida* *H. limbata*, and other species adorned the collection.

During the evening Mr. Robert Scharff distributed a number of fossil and recent shells amongst those members desiring them, the localities from which they were obtained being Nîmes, Bordeaux, Arcachon, Cauteret, &c. Amongst the species may be enumerated *Helix niciensis*, *H. limbata*, *H. nemoralis*, *H. hortensis*, *H. cornea*, *H. incarnata*, *H. obvoluta*, *H. vermiculata*, *H. Carthusiana*, &c., *Zonites olivetorum*, *Planorbis corneus*, *Limnæa palustres*, *Pomatias obscurus*, &c. A good number of fossil *Planorbes*, *Bithyniæ*, *Limnææ*, &c., were also given by Mr. Scharff, all from the freshwater beds at Sancats.



BIBLIOGRAPHY.

 1 8 7 7 .

LAND AND FRESHWATER.

Adami (G.B.)—A new form of *Clausilia*.—Una nuova forma di *Clausilia*.—Bull. Soc. Mal. Ital. 1877, iii. pp. 65 to 67.

A specimen from Cortona, sent by Adami under the name of *Clausilia laminata* var. *Cortonensis* Ad., to Herr Clessin of Regensburg, is described by the latter in the 'Jahrbücher' under the name of *C. Adami*, he regarding it as entitled to specific rank. Signor Adami translates the diagnosis and publishes it as above.

Angas (Geo. French, C.M.Z.S.)—Description of a New Species of *Helix* from South Australia.—P.Z.S., Jan. 16, 1877, one page and three woodcuts.

Helix (Rhagada) Kooringsensis.—Found 30 miles in a N.E. direction from the Burra Mines, S. A., by Mr. F. G. Waterhouse. The author remarks that it is very similar in the character of its sculpture to *H. Silveri* Ang. Judging by the description and figures it seems very similar also to the South European *H. scabriuscula* Deshayes.

Angas (Geo. French, C.M.Z.S.)—Notes on a small Collection of Land and Freshwater Shells from S.E. Madagascar, with Descriptions of New Species.—P.Z.S., June 5, 1877, pp. 527 and 528 and plate liv.

The collection — consisting of an *Achatina*, 8 *Helix*, 1 *Megalostoma*, 1 *Cyclotus*, 4 *Cyclostomus*, 2 *Melania*, 2 *Navicella*,

by Mr. Waters. It also included the following new species:—*Bulinus Balstoni*, allied to another Madagascan species, *B. clavator* Petit de la Sauss.; *Helix Watersi*, allied to *H. sepulchralis*; *H. Ekongensis*; *H. Balstoni*, which greatly resembles the Indian *H. semidecussata* Pfr.; and *Physa Madagascariensis*.

Baudon (Dr. Aug.)—Supplement to his Monograph of French Succinea.—Supplément à la Monographie des Succinées françaises.—Journal de Conchyl., Oct. 1877, 3e série, tome xvii., pp. 348 to 355 and planche xi.

Succinea Crosseana (pl. xi., f. 1), from canton of Villefranche-Lauragais; and *S. breviscula* (pl. xi., f. 2) from Aulus-les-Bains, are described and figured as new. The paper concludes with observations on *S. elegans*, *S. putris* and *S. acrambleia*.

Belt (Thomas).—Introduction of Foreign Land and Freshwater Mollusca.—Zool., July 1877, 3rd series, i., p. 302.

Mr. Belt suggests that *Corbicula (Cyrena) fluminalis* from the Nile, *Paludina marginata* and *Unio littoralis* from France, all of them inhabitants of Britain in the palæolithic age, should be reintroduced in sufficient quantities to give a fair chance of acclimatization, with the view of solving the problem of the climatic condition of Britain at the time when palæolithic man co-existed with the Hippopotamus, Elephant and Rhinoceros.

Boettger (Dr. O.)—Diagnoses of New Forms of Clausilia.—Diagnosen neuer Clausilienformen.—Nachrichtsblatt d. Deuts. Mal. Ges., Aug. 1877, ix., pp. 65 to 76.

The new forms are:—*Clausilia laminata*, Mntg., var. *triloba*, from Croatian military frontier; *C. pelagosana* nov. forma, 1 *Lymnaea* and 1 *Nerita*—was made at Ekongo on the S.E. coast

from the island Pelagosa in the Adriatic; *C. Cattaroensis* Z. var. *minor*, Albania; *C. Stossichi* nov. sp., Dalmatia; *C. sulcosa* Wagn., var. *atractoides* Kobelt, Dalmatia; *C. albicosta* n. sp., Macedonia; *C. strangulata* Fér., var. *minor*, Crete; *C. dextrorsa* n. sp., Macedonia; *C. perplana* n. sp., Macedonia; *C. pirostoma* n. sp., Croatia, 5000 feet above sea-level; *C. tau* n. sp., Kioto, Japan; *C. strictulana* n. sp., Nagasaki, Japan; *C. Hickonis* n. sp., Japan; *C. ptychochila* n. sp., probably from China; *C. perlucens* n. sp., Caucasus; *C. ossetica* Bayer non Parr. nec A. Schm., Koischet, Caucasus; *C. thessalonica* Friv., var. *major*, Macedonia; and *C. unicristata* n. sp., Ekatherinenfeld.

Boettger (Dr. O.)—The Fauna of Eisenach.—Zur Fauna von Eisenach.—Nachrichtsblatt d. Deuts. Mal. Ges., Dec. 1877, ix., pp. 97–8.

Ten species (of *Helix*, *Clausilia*, *Pupa*, *Succinea* and *Lymnæa*) are mentioned.

Brazier (John, C.M.Z.S.)—Description of Three New Species of Shells from Australia and New Guinea.—Proc. Lin. Soc. New S. Wales, 1877, ii., pp. 25 to 27.

Helix (Hadra) Broadbenti from New Guinea, *H. (Callicochlias) Etheridgei*, N. E. Australia, and *Auricula (Alexia) meridionalis*, South Australia. The last species appears to be the first record for the Southern Hemisphere for the genus *Alexia*.

Brazier (John, C.M.Z.S.)—Description of two New Species of *Helix* from New Guinea and the Louisiade Islands.—Proc. Lin. Soc. New S. Wales, 1877, ii., pp. 120 to 122.

Helix Hixsoni, New Guinea, and *H. Diomedes*, Louisiade Archipelago. The last is differentiated from *H. Brumeriensis* Forbes, from the same island. Mr. Brazier concludes by altering

the specific name of a species previously described by him in the Proc. Lin. Soc. New S. Wales, 1876, p. 113 to 129. *Cyclophorus* (*Ditropis*) *Beddomei* Brazier l.c., is altered to *Macleayi*, there being already a *Cyclophorus* (*Ditropis*) *Beddomei*, W. F. Blanford, Journ. As. Soc. Bengal, Contrib. to Ind. Mal., 1869.

Brot (Dr. A.)—Variation in Swiss Shells.—Proc. Verb. Soc. Mal. Belg., April 1877, tome vi., p. xlviii.

Helix incarnata, subscalariform; *H. hispida*, with canaliculated suture; *H. lapicida*, white; *H. pomatia*, white, in association with white *H. nemoralis*; *H. sylvatica* and var. *alpicola*, both white; *Vitrina pellucida*, sinistral; *Limnæa peregra*, malformed at base of columella, which affected them during the abundance in the same pond of *Hydra viridis* and disappeared on the disappearance of that animal.

Clessin (S.)—Two New South European Mollusks.—Zwei neue südeuropäische Species.—Jahrb. Deuts. Mal. Ges., July 1877, iv., pp. 253 to 256.

The species are *Clausilia Adami* from Cortona in Umbria; and *Bythinella columna* from Karfreit in Küstenland.

Clessin (S.)—The Molluscan Fauna of the Bavarian Woods.—Zur Molluskenfauna des bayrischen Waldes.—Nachrichtsblatt d. Deuts. Mal. Ges., April and May, 1877, ix., pp. 39 to 42.

Eight land shells, viz.:—*Hyalina* 2 species, *Helix* 4, *Clausilia* and *Succinea*, 1 each. Thirteen water shells, viz.:—one species of *Limnæa*, 3 of *Planorbis*, a *Physa*, an *Ancylus*, a *Margaritana*, a *Unio*, an *Anodonta*, and 4 of *Pisidium*.

Clessin (S.)—A New Species of Acme.—Eine neue Acme.—Nachrichtsblatt d. Deuts. Mal. Ges., April and May, 1877, ix., pp. 42–43.

Acme gracilis nov. sp., from Tolmein in Küstenland. It is diagnosed from *A. fusca* and from *A. subdiaphana* Benoit.

Clessin (S.)—Mollusca from the Zillerthal in Tyrol.—Mollusken aus dem Zillerthal in Tyrol.—Nachrichtsblatt d. Deuts. Mal. Ges., April and May, 1877, ix., pp. 43 to 44.

Two species of *Helix*, 3 of *Clausilia*, 2 of *Vitrina*, and 4 of *Hyalina* are mentioned.

Clessin (S.)—A New Species of Pupa.—Eine neue Pupa.—Nachrichtsblatt d. Deuts. Mal. Ges., June and July, 1877, ix., pp. 49 to 51.

Pupa (Vertigo) Heldi, from the rejectamenta of the Danube near Ratisbon.

Crosse (H.) and Fischer (Dr. P.)—Diagnosis of a New Mexican Choanopoma.—Diagnosis Mollusci novi, reipublicæ Mexicanæ incolæ.—Journal de Conchyl., Oct. 1877, 3e série, tome xvii., 362.

Choanopoma Chiapasense from Chiapas (F. Sumichrast).

Crosse (H.) and Fischer (Dr. P.)—Note on Azeca monodonta de Folin and Berillon.—Journal de Conchyl., Oct. 1877, 3e série, tome xvii., p. 397.

MM. de Folin and Bérillon have instituted a new subgenus *Cryptazeca* for this species, which they describe as new from near Bayonne.

Delaunay (E.)—New Species of Vitrina.—Description d'une espèce de Vitrine des environs de Cherbourg (Manche).—Journal de Conchyl., Oct. 1877, 3e série, tome xvii., p. 363 and plate xi.

Vitrina Baudoni (pl. xi., f. 5) resembles *V. pellucida* and the var. *subglobosa* Mich.

Fordham (H. George).—**Supposed Recent Extinction of *Cyclostoma elegans* in North Herts.**—Proc. Watford Nat. Hist. Soc., 1877, i., pp. 172 and 173.

Mr. John Evans, F.R.S., the president, referring (at p. 187) to this note, states the shell to be comparatively abundant in Southern Herts.

Gredler (Vincenz.).—**Critical Fragments.**—Kritische Fragmente.—Nachrichtsblatt d. Deuts. Mal. Ges., January 1877, ix., pp. 1 to 6.

Heimburg (H. von).—**Molluscan Fauna of Oldenburg.**—Zur Mollusken-Fauna von Oldenburg.—Nachrichtsblatt d. Deut. Mal. Ges., February and March 1877, ix., pp. 17 to 21.

The catalogue enumerates 2 species of *Arion*, 2 of *Limax*, a *Vitrina*, 6 of *Hyalina*, 12 of *Helix*, a *Cionella*, 4 of *Pupa*, 2 of *Clausilia*, 3 of *Succinea*, a *Carychium*, 7 of *Limnæa*, an *Amphipeplea*, 2 of *Physa*, 8 of *Planorbis*, an *Ancylus*, 2 each of *Paludina* and *Bithynia*, 3 each of *Valvata* and *Unio*, 4 of *Anodonta*, 5 each of *Cyclas* and *Pisidium*, and a *Dreissena*, with indications of locality and a few general remarks.

Ihering (Dr. Herman von).—**The Reproductive Organs in *Succinea*.**—Ueber den Geschlechtsapparat von *Succinea*.—Jahrb. Deuts. Mal. Ges., April 1877, iv., pp. 136 to 141 and woodcut.

Ingersoll (Ernest).—**On a Collection of Mollusks from Utah and Colorado.**—Proc. Davenport Ac. Nat. Sci., ii., pp. 130 to 134.

The collection includes of *Limax* 1 species, of *Vitrina* 2, *Microphysa* 1, *Zonites* 2, *Patula* 2, *Vallonia* 1, *Pupilla* 3, *Vertigo* 1, *Succinea* 2, *Limnæa* 6, *Carinifex* 1, *Physa* 3, *Planorbis* 1, *Gyraulus* 1, *Valvata* 1, *Fluminicola* 1, *Anodonta* 1, *Sphaerium* 1, and *Pisidium* 1.

Jeffreys (Dr. J. Gwyn, F.R.S.)—**Helix villosa** Drap. new to Britain. — Annals and Mag. Nat. Hist., Feb. 1. 77, Fourth Series, xix., 199 and 200.

Found August, 1873, on the moors near Cardiff, Glamorgan-shire, by Mrs. D. Robertson. Inhabits Germany, Eastern France and Switzerland. Dr. Jeffreys also notes that the var. *alpestris* of *H. arbustorum*, usually an alpine mollusc, is found on the banks of the Lea, and in the grounds of Ware Priory.

Jeffreys (Dr. J. Gwyn, F.R.S.). — **Vertigo Moulinsiana** Dupuy. — Ann. and Mag. Nat. Hist., May 1877, Fourth Series, xix., p. 432.

Short note on localities and differentiation. Dupuy's name (1849) is stated to have priority.

Jeffreys (J. Gwyn, F.R.S.)—**The Valorous Expedition.**—Die Aushente des 'Valorous.'—Nachrichtsblatt d. Deuts. Mal. Ges., Oct. 1877, ix., pp. 87 to 90.

Dr. Kobelt gives an account translated from Dr. Jeffreys' Address to the British Association at Plymouth.

Kobelt (Dr. W.)—**Greek species of Buliminus.**—Ueber einige griechische Buliminus.—Jahrb. Deuts. Mal. Ges., July 1877, iv., p. 265 to 268.

Notes on *B. Athens* Frivaldszky, and *B. olympicus* Parreyss.

Kobelt (Dr. W.)—**Helix tenuicostata** Shuttleworth.—Nachrichtsblatt d. Deuts. Mal. Ges., July, 1877, ix., p. 60.

Short note on synonymy. The shell is absolutely identical with *H. micropleuros* Paget, which will stand, as a species of *Helix* (*Polymita*) named *tenuicostata* by Dunker in 1847 will take priority of Shuttleworth.

- Kobelt (Dr. W.)—*Voluta musica* L.**—Nachrichtenblatt d. Deuts. Mal. Ges., June and July, 1877, ix., p. 60.
Short note from the 'Journal de Conchyliologie.'
-

- Kobelt (Dr. W.)—A new *Campylæa*.**—Eine neue Campylæa.—Nachrichtenblatt d. Deuts. Mal. Ges., Aug. 1877, ix., pp. 76 to 77.

Helix (Campylæa) narentina Kleciach MSS., from the mountains of the Narenta-Thales, near Ragusa.

- Lewis (James, M.D.)—*Unionidæ* of Ohio and Alabama.**—Proc. Ac. Nat. Sci. Philad., 1877, p. 26 to 36.

A comparison of what the author terms the "equivalent" species of the two drainage-systems, and suggestions as to synonymy and distribution.

- Martens (Dr. Ed. von).—The Molluscan Fauna of the Thuringian Forest.**—Die Schneckenfauna des Thüringer Waldes.—Jahrb. Deuts. Mal. Ges., July 1877, iv., p. 213 to 237.

The list which terminates this paper includes 3 species of *Arion*, 7 *Limax*, 3 *Vitrina*, 11 *Hyalina*, 1 each of *Punctum* and *Patula*, 22 *Helix*, 3 *Buliminus*, 2 *Cionella*, 1 *Balia*, 9 *Clausilia*, 3 *Pupa*, 4 *Vertigo* and 3 *Succinea*.

- Martens (Dr. Ed. von).—Land and Freshwater Snails of Puerto Rico.**—Land- und Süßwasser-Schnecken von Puerto Rico.—Jahrb. Deuts. Mal. Ges., Oct. 1877, iv., pp. 340 to 362 and plate 12.

The list includes a *Cyclotus*, a *Megalomastoma*, 2 *Choanopomæ*, 2 *Cistule*, 5 *Helicinæ*, a *Mörchia*, 4 *Oleacina*, 3 species of *Spiraxis*, 2 *Hyalinæ* (one new, *H. insecti*), 1 *Guppya*, 11 *Helices* (of 6 subgenera; two of the species are new, *H. (Microphysa) Krugiana* and *H. (Thelidomus) angulifera*), 4 *Stenogyra*, a *Clausilia* (s. g., *Nenia*), a *Pupa*, an *Otostomus*, 3 *Bulimuli*, a new species of

Bulimus (*Eudioptus psidii*), a *Macroceramus*, 3 *Cylindrella*, a *Gæotis*, 2 *Succineæ*, a *Limnæa*, 3 *Planorbis*, an *Hydrobia*, and 4 *Neritinæ*. A table of distribution of the whole of the 120 species known for Puerto Rico in the other Antilles ends the paper. The 60 species added to the above from the researches of other collectors include a *Megalostoma*, a *Cistula*, 4 *Chondropomæ*, 3 *Helicinæ*, a *Stoastoma*, 3 *Truncatella*, a *Glandina*, a *Pseudohyalina*, a *Conulus*, 8 *Helices* (subgenera *Euclasta*, *Plagioptycha*, *Eurycratera*, *Polydotes* and *Caracolla*), 6 *Stenogyra*, 4 *Pupæ*, a *Macroceramus*, a *Cylindrella*, a *Simpulopsis*, 2 *Gæotis*, a *Succinea*, a *Vaginulus*, a *Physa*, 5 *Planorbis*, 2 *Ancylus*, 4 *Melampis*, a *Pedipes*, a *Neritina*, a *Dreissena* and a *Cyrenoida*.

Martens (Dr. Ed. von).—**The Variations of *Liguus virgineus*.**—Die Variationen von *Liguus virgineus*.—Jahrb. Deuts. Mal. Ges., Oct. 1877, iv., 362 to 367.

Martens (Dr. Ed. von).—***Helix Schweinfurthi*, new species.**—Jahrb. Deuts. Mal. Ges., Oct. 1877, iv., p. 368 and plate 12.

From the plateau of Gebel-Galâla collected by Dr. Schweinfurth in 1876.

Maze (H.).—**Habits of *Amphibulima patula*.**—Note sur les mœurs et les habitudes de l'*Amphibulima patula* Brug.—Journal de Conchyl., Oct. 1877, 3e série, tome xvii., p. 347.

An interesting note from observations made at Marie-Galantie, where they feed on *Lepidium virginicum* and *Sinapis lanceolata* during the night, resting during the day under the leaves of the Banana.

Mazyck (Wm. G.).—**On a New Species of *Helix* from Texas.**—Proc. Ac. Nat. Sci. Philad., 1877, pp. 297 and 298.

H. (Triodopsis) Henriettæ, from Eastern Texas, more nearly resembles *H. vultuosa* Gould, than any other N. American species.

Martens (Dr. Ed. von).—**Japanese Shells.**—Sitzungsbericht des Ges. naturforschender Freunde zu Berlin, vom 17 Ap., 1877.

A summary is given of the shells, 73 in number, collected by Dr. Fr. Hilgendorf and Dr. W. Dönitz. The new species are *Diplommantina labiosa*, *D. pusilla*, *Helix scævola*, *Clausilia Hilgendorfi*, *C. eurystoma*, *C. nodulifera*, *C. brevior*, *C. platyauchen*, *C. hyperolia*, *C. decussata*, *Anodonta lauta*, *Unio nipponensis* and *Cyrena transversa*.

Martens (Dr. Ed. von).—**Persian Shells.**—Sitzungsbericht der Ges. naturf. Freunde zu Berlin, vom 17, July, 1877.

The author enumerates 75 species collected by Prof. G. Fritsch in his travels in Persia in 1874.

Morelet (A.)—**Excursion to the Isle Johanna, Comores.**—Excursion Conchyliologique dans l'île d'Anjouan (Johanna).—Journ. de Conchyl., Oct. 1877, 3e série, tome xvii., pp. 325 to 347 and 2 planches.

The following shells are described as new :—*Succinea Nevilli* (pl. xii., f. 2); *Helix corusca* (xii., 1); *H. russeola* (xiii., 1); *H. Arachne* (xii., 7); *Bulimus Bewsheri* (vii., 4) and vars. α , β , γ , δ , ϵ ; *B. adumbratus* Pfeiffer (xiii., 5) and vars. α , β , γ ; *B. (Stenogyra) Johanninus* (xii., 3); *Achatina cornea* (xiii., 9); *Ennea modioliformis* (xiii., 7); *E. larva* (xiii., 3); *E. acicula* (xiii., 4); *Pupa minuscula* (xii., 5); *Cyclotopsis Nevilli* (xiii., 8); *C. filicum* (xiii., 2); *Assimineia parvula* (xii., 6); and *Neritina comorensis* (xiii., 6). The paper concludes with a catalogue of the species known to inhabit the Comores group, including 48 species, and is prefaced by remarks on the geographical affinities of the fauna.

Nelson (William) and **Taylor** (John W.)—**Annotated List of the Land and Freshwater Mollusca known to inhabit Yorkshire.**—Trans. Yorksh. Nat. Union, Series C, i., pp. 2 to 16.

The Yorkshire Naturalists' Union having commenced the issue of Transactions it was judged advisable by its Conchological Section to inaugurate the conchological series by the issue of a list showing the distribution of all the species and varieties of land and freshwater mollusca known for Yorkshire. The preparation of this list was entrusted to Messrs. Nelson and Taylor, who also include in the paper critical remarks on the synonymy and differentiation of the species in continuation of the work begun by Dr. Jeffreys in his classical work. For the recording of distribution the county is divided into 24 districts based on its physical configuration. Of this list the first sheet is before us, including the species of *Sphaerium* (4 and 3 varieties), *Pisidium* (5 and 4 varieties), *Unio* (3 and 3 varieties) and *Anodonta* (2 and 4 varieties).

Oberndorfer (Rud.)—*Helix tenuilabris* Braun, auf der rawhen Alp lebend.—Nachrichtsblatt Deuts. Mal. Ges., Feb. and Mar. 1877, ix., pp. 21 to 23.

Paulucci (March. M.)—**New Station for Clausilia Lucensis.**—Nuova Stazione della C. Lucensis Gent.—Bull. Soc. Mal. Ital., 1877, iii., pp. 9 to 12.

Paulucci (March. M.)—**A Helix new to Italy.**—Di una specie di *Helix* (nuova per la fauna d'Italia) raccolta nella provincia di Lucca.—Bull. Soc. Mal. Ital., 1877, iii., pp. 13 to 15.

Paulucci (M.)—**Notes on some Clausilias.**—Lettera diretta al segretario della Società Malacologica Italiana, Novoli, 6 Novembre, 1877.—Bull. Soc. Mal. Ital., 1877, iii., pp. 68 to 70.

The notes refer to certain Calabrian species, including *C. candidescens* Ziegler, *C. Orsiniana* Villa, and *C. punctulata* Küster.

Paulucci (March. Marianna).—**On Italian Hyalinæ.**—Fauna Italiana. Comunicazioni Malacologiche: Articolo I.—Bull. Soc. Mal. Ital., 1877, iii., pp. 165 to 166.

The Marchioness announces her intention of publishing from time to time articles on the Italian fauna. The present article is on *Hyalina Uziellii* Issel, and its specific value. It seems probably identical with *H. lucida* Drap.

Petterd (W. F.).—**List of Land Shells from Richmond River district, New South Wales, with observations on their geographical distribution.**—Liste des Coquilles terrestres déjà connues, recueillies sur le territoire de Richmond River, dans la Nouvelle-Galles du Sud (Australie), avec des observations sur leur distribution géographique.—J. de Conchyl., Oct. 1877, 3e série, tome xvii., pp. 356 to 362.

This list includes 28 species of *Helix*, 1 *Bulinus*, 1 *Tornatellina*, 1 *Pupa*, 2 *Vitrina*, 2 *Succinea*, 2 *Pupina* and 1 *Helicina*.

Pfeiffer (Dr. Geo.).—**Anatomical Inquiries into Parmarion Kerstenii Mart.**—Anatomische Untersuchung des Parmarion Kerstenii Mart.—Jahrb. Deuts. Mal. Ges., Oct. 1877, ix., pp. 325 to 329 and woodcut.

Pfeiffer (Dr. Geo.).—**Anatomical Inquiries as to Achatinella vulpina.**—Anatomische Untersuchung der Achatinella vulpina.—Jahrb. Deuts. Mal. Ges., Oct. 1877, iv., pp. 330 to 334 and woodcut.

Pollard (Henry).—**Balia perversa.**—2nd Hud. Nat., Nov. 1877, iii., p. 59.
Recorded for Grassington, Yorkshire.

Pratt (W. H.).—**Shells noted near Davenport, Iowa.**—Proc. Davenport Acad. Nat. Sci., ii., pp. 10, 13, 18, 21 & 26.

Helix profunda Say, *H. thyroides* Say, *H. concava* Say, and *Succinea obliqua* Say, are the only species mentioned. In subse-

quent excursions *Bulinus hypnorum* L., *Planorbis parvus* Say, *Segmentina armigera* Say, *Sphærium* sp., *Hyalina arborea* Say, *H. minuscula* Binney, *H. lineata* Say, *Helix striatella* Anthony, *H. labyrinthica* Say, *H. monodon* Rackett, *Pupa fallax* Say, *P. armifera* Say, *P. contracta* Say, *Planorbis bicarinatus* Say, and *Pomatiopsis lapidaria* Say, *Limnæa caperata*, *Planorbis parvus*, *Helix perspectiva* Say, *Limnæa reflexa*, *Physa heterostropha*, *Planorbis (Menetus) exacutus*, *Vivipara intertexta*, *Helix clausa*, *H. multilineata*, *Vivipara lineata*.

Purves (J.)—An Anomaly of *Limnæa limosa*.—Note sur une Anomalie de la *Limnæa limosa*.—Proc.-Verb. Soc. Mal. Belg., April, 1877, tome vi., p. xlvii. and woodcut.

A single specimen of a carinated form found in a pond at Belford Moor, Northumberland, gives rise to speculation as to the influence of birds on the distribution of mollusca, the pond in question being situated on a ridge or water-shed.

Reinhardt (Dr. O.)—Some Sicilian Helices.—Bemerkungen über einige sicilianische *Helix*-Arten.—Jahrb. Deuts. Mal. Ges., Oct. 1877, iv., pp. 277 to 287 and plate ix.

Remarks on *Helix Zanellia* Testa, *H. templorum* Benoit, *H. Bocconiana* Benoit, *H. Schwerzenbachiana* Calcar, *H. Brocchiana* Calc. and *H. Cupaniana* Calc.

Reinhardt (Dr. O.)—On Japanese Hyalinæ.—Ueber japanische Hyalinen.—Jahrb. Deuts. Mal. Ges., Oct. 1877, iv., pp. 313 to 320 and plates ix. and x.

The species noticed are *Zonitoides nitida* Müll., *Euhyalina radiatella* nov. sp., *E. Yessoensis* nov. sp., *Crystallus Hilgendorffii* nov. sp., *C. microdiscus* nov. sp., *Pseudohyalina minuscula* Binney, *Microcystis rejecta* Pfr., *M. labilis* Gould, *M. Dænitzi* nov. sp., *M. Möllendorffii* nov. sp., *Conulus pupula* Gould, *C. pustulina* nov. sp., *C. sinapidium* nov. sp., *C. phyllopila* A. Ad., *C. incerta* A. Ad., *C. tenera* A. Ad., *C. stenogyga* A. Ad., *C. acutangula* A. Ad. The paper concludes with some general remarks.

Reinhardt (Dr. O.)—Diagnoses of Japanese Land-snails.—Diagnosen japanischen Landschnecken.—Jahrb. Deuts. Mal. Ges., Oct. 1877, iv., pp. 320 to 325 and plate xi.

Alycæus Nipponensis, *Succinea horticola*, *Helix* (*Patula*) *amblygona*, *H.* (*Vallonia*) *tenera*, *H.* (*Fruticicola*) *verrucosa*, *Pupa* (*Vertigo*) *hydrophila*, *P.* (*Leucochila*?) *armigerella*, and *Carychium noduliferum*, are the species characterized.

Reinhardt (Dr. O.)—Japanese Mollusca.—Sitzungs-Bericht der Ges., naturforschender Freunde zu Berlin, vom 20, März, 1877.

The following are described as new:—*Alycæus nipponensis*, *Hyalina* (*Microcystis*) *Doenitzii*, *H.* (*Crystallus*) *Hilgendorffi*, *Patula amblygona*, *Vallonia tenera*, *Corbicula straminea*, *C. biformis*.

Reinhardt (Dr. O.)—Japanese Hyalinæ.—Sitzungs-bericht der Ges. naturforschender Freunde zu Berlin, vom 17, Ap. 1877.

The new species are *Euhyalina radiatella*, *E. Yessoënsis*, *Crystallus microdiscus*, *C. Möllendorffi*, *Conulus pustulina*, *C. sinapidium*, *Succinea horticola*=*lauta* von Mart. nec Gould, *Fruticicola verrucosa*, *Vertigo hydrophila*, *Pupa armigerella*, *Carychium noduliferum*.

Reinhardt (Dr. O.)—The Fauna of Thuringia.—Zur Fauna von Thüringen.—Nachrichtsblatt d. Deuts. Mal. Ges., April and May, 1877, ix., pp. 36 to 38.

Remarks and lists of an *Arion*, a *Limax*, a *Vitrina*, 5 *Hyalinæ*, 16 *Helices*, 2 *Buliminus*, a *Cionella*, 4 *Pupa*, 4 *Clausiliæ*, a *Sira*, 2 *Succinæ*, a *Carychium* and a *Limnæa*.

Robertson (David).—Land and Freshwater Shells of Scotland.—Zool., May, 1877, 3rd ser., i., p. 282.

Notes of a meeting of the Nat. Hist. Soc. of Glasgow, at which Mr. Robertson exhibited *Pisidium fontinale* var. *Henslowana* (Glasgow and Paisley Canal), *Planorbis complanatus* (moderately common in Lochend Loch, Edinburgh), and *Helix villosa* (Cardiff) new to Britain.

Roffiaen (Fr.)—Land and Freshwater Shells collected at Waulsort in the Meuse Valley.—Note sur les mollusques terrestres and fluviatiles recueillis a Waulsort (1877).—Proc. Verb. Soc. Belg. Oct., 1877, tome vi., pp. xci. to xciii.

The list includes 1 *Vitrina*, 2 *Succinæa*, 3 *Zonites*, 10 *Helix*, 5 *Bulimus*, 3 *Pupa*, 1 *Balia*, 7 *Clausilia*, 2 *Cyclostoma*, 2 *Bithynia*, 1 *Neritina*, 3 *Planorbis*, 3 *Limnæa*, 1 *Ancylus*, 1 *Cyclas*, 1 *Anodonta*, and 1 *Unio*. The locality is densely wooded and on a limestone soil.

Schepman (M. M.)—*Helix tretrazona* Jan.—Jahrb. Deuts. Mal. Ges., July, 1877, iv., pp. 268 to 272, plate and woodcuts. Anatomical Notes.

Sheldon (Prof. D. S.)—Shells new to the Davenport (Iowa) list.—Proc. Davenport Ac. Nat. Sci., 1877, ii., p. 143.

Five species are added to Mr. W. H. Pratt's list (published in vol. i.); of the genus *Unio*, *Limnophysa*, *Helix* and *Pupa*.

Smith (Edgar A., F.Z.S.)—Description of a New Species of *Helix*.—Ann. and Mag. Nat. Hist., Sep. 1877, 4th series, xx., pp. 242 to 244.

H. (Merope?) Barnaclei, from Hawaii, Sandwich Islands. Closely resembles *H. fringilla* Pfr., Admiralty Islands.

Smith (Edgar A., F.Z.S.)—Description of a New Species of *Bulimus* from South Africa.—Ann. and Mag. Nat. Hist., Dec. 1877, 4th series, xx., pp. 538–9.

B. (Pachnodus) Drakensbergensis, from the eastern slope of the Drakenberg Mountains at Lydenberg goldfields, Transvaal. Nearly allied to *B. Natalensis* Krauss, and *B. arenicola* Benson.

Strebel (H.)—Mexican Land and Freshwater Mollusca.—Beitrag zur Kenntniss der Fauna Mexicanischer Land- und Süsswasser-Conchylien. III. Theil.

Strobel (Prof. Pellegrino).—On the Distribution of the Mollusca of the Northern Slope of the Appennines.—Intorno alla distribuzione oro-geografica dei molluschi viventi del Tidone alla Secchia.—Bull. Soc. Mal. Ital., 1877, iii., pp. 81 to 135.

The author commences this elaborate paper by an enumeration of the species, giving their distribution. He mentions 1 *Testacella*, 4 *Limax*, 1 *Amalia*, 3 *Vitrina*, 7 *Hyalina*, 2 *Arion*, 20 *Helix*, 4 *Buliminus*, 3 *Cionella*, 10 *Pupa*, 1 *Balia*, 7 *Clausilia*, 3 *Succinea*, 1 *Carychium*, 2 *Limnæa*, 2 *Planorbis*, 1 each of *Ancylus*, *Acme*, *Cyclostoma*, *Amnicola*, *Paludinella*, *Unio*, *Anodonta*, *Cyclas* and 3 of *Pisidium*. A list succeeds of species (1 *Hyalina*, 6 *Helix*, 1 each of *Buliminus*, *Stenogyra*, *Pupa*, *Clausilia* and *Cyclostoma*) which have been erroneously recorded for the district; then follows a list (a *Hyalina* and 3 *Helices*) which should possibly occur; and a third note records 2 acclimatized species of *Helix*. The second part of the paper is a contrast of the faunas of the northern and southern slopes of the Appennine range: the conclusions drawn being that the more salient characteristics of the northern slope are:—1. Absence of the genus *Pomatias*; 2. Absence or extreme scarcity of the subgenus *Campylæa* (*Helix*); 3. Presence of the western *Pupa variabilis*, which here reaches its extreme eastern limits; 4. Presence of *Helix hispida*, *H. ciliata*, *H. fruticum*, *H. pomatia* and *Bulimus detritus*, which here find their southern limit, as also the type of *H. nemoralis*; 5. The fact that the northern typical form of *Clausilia Comensis* here

makes its passage to the southern variety *Lucensis* by means of the var. *interposita*; and 6. The occurrence of *Buliminus detritus* in the Baganza valley.

The third part of the paper is devoted to a similar contrast of the faunas of the plains and the mountains, beginning with a list of the species of the plain, then including a list of erroneously recorded species, and a list of species probable to occur on the plains. The author concludes that the facts tend to confirm the law of distribution, that the terrestrial species present themselves in greatest abundance on the hills and low mountains, and that inversely the aquatic species predominate above all in the region of the lakes. So, the plains of the district spoken of do not present that abundance of aquatic species found in the irrigated Lombardo-Venetian plains and at the foots of the Piedmontese and Lombard Alps, abounding in lakes. Part 4 is in the form of table showing the distribution of the mollusca in the plains, the hills, the mountains, and the Alpine regions, the numbers for each being respectively 44, 66, 72 and 23. The paper concludes with a discussion of Dr. Kobelt's views as to the geographical regions into which Europe is divisible, and as to the species characteristic of the region under consideration.

Taylor (John W.) — Notes on Swiss Mollusca, &c.—
Nat., Oct. 1877, iii., 34 to 39.

The localities referred to are Basle, Schaffhausen, Zurich, Fluelen and Altorf, the Righi, the lake Brienz, the Brunig Pass, Interlaken, Lauterbrunnen, the Lake Thun, the Gemmi Pass and Chamounix, numerous species of land mollusca being noticed.

Tristram (Rev. Canon H. B., F.R.S.) — Introduction of Foreign Land and Freshwater Mollusca.—Zool, June 1877, 3rd series, i. 260—1

Mr. Tristram notes his successful acclimatization in Durham of *Helix villosa* from Switzerland ; of *Parmaella* near Newcastle, of *H. lapicida* from the South of England on the banks of the Wear. African and Syrian *Clausilias*, and Syrian *Helices* turned out in Durham have not been able to stand the cold of winter. The ova of freshwater mollusca are often transported on the feet of water birds; the author once shot a mallard in the Sahara, a hundred miles away from water, to whose feet adhered ova of a mollusk—probably *Succinea*.

Various Recorders.—Yorkshire Shells.—The 'Naturalist,' Jan. to Dec. 1877, vols. ii. and iii.

Weaver (John).—Fauna and Flora of Harting, Sussex.—Being part of 'The History of Harting, in the County of Sussex,' by the Rev. H. D. Gordon, M.A., 8vo., pp. 492, London: W. Davy & Son, 8, Gilbert Street, 1877.

Whitwham (Joseph).—A List of the L. & F. W Shells found in the neighbourhood of Huddersfield.—Naturalist (Huddersfield), May and June, 1877, ii., pp. 151 to 153 and 167 to 168.

This list includes 6 species and varieties of *Sphærium*, 4 *Pisidium*, 1 *Anodonta*, 2 *Bythinia*, 5 *Planorbis*, 13 *Limnaea*, and 1 *Ancylus*—altogether 31 freshwater shells, 1 of *Arion*, 5 *Limax*, 1 *Succinea*, 1 *Vitrina*, 18 *Zonites*, 20 *Helix*, 3 *Pupa*, 3 *Vertigo*, 1 *Clausilia*, 3 *Cochlicopa*, 1 *Carychium* and 1 *Acme*.

Wiegmann (Fritz).—On the Extension (?) of *Limax variegatus* Drap.—Ueber die Verbreitung des *Limax variegatus* Drap.—Nachrichtenblatt Deuts. Mal. Ges., Jan. 1877, ix., pp. 8 to 10.

CONTRIBUTIONS TO A BETTER KNOWLEDGE
OF THE
LAND AND FRESHWATER SHELLS OF YORKSHIRE.

BY THE REV. W. C. HEY, M.A.

Sphærium ovale. Abundant near Blue Bridge, York, and larger than any specimens I have seen from other localities.

S. rivicola. In company with *S. ovale*; very fine.

S. lacustre. Large and abundant near Layerthorps, York, in the Foss. Small specimens in narrow ditches near Clifton, York.

S. corneum. Abundant about York. Pale variety in Askham Bog, York.

Pisidium amnicum. In the Ouse and Foss at York.

P. pulchellum. Very abundant in shallow ditches near York.

P. pusillum. Similar localities.

Unio tumidus. Very abundant in the Foss and in many varieties. I notice particularly :—

1. Thin, with green rays.
2. Thick, short, rich brown in color.
3. Incurved, like *margaritifera* (scarce).
4. Ponderous and very large, oblong in shape (scarce).

U. pictorum. Common in the Ouse below York.

Anodonta cygnea. Very abundant in the Foss at York. I notice these varieties in particular :—

1. Very large, thin, pale olive-green. Foss Islands, where a large quantity of warm water enters the river.
2. Very thin and broad, small. Ouse.

3. Var. *radiata* (a form of Jeffrey's *anatina*). Foss mouth, most lovely bright shells, rayed with a rich summer green.

4. Tumid, thick, narrow. Hornsea Mere.

Neritina fluviatilis. The Ouse near Bishopthorpe. A very dark variety.

Paludina vivipara. Profusely abundant in the Ouse below York. Very fine in the Foss.

P. contecta. Fulford, near York.

Bythinia Leachii. Abundant at one particular spot in the river Foss above York.

B. tentaculata. Foss, Askham Bog, &c. In the latter place a variety with a white band occurs, and the specimens are of unusual dimensions.

Valvata cristata. In profusion in Dringhouses Bog, near York.

V. piscinalis. Foss, Askham, &c.

Planorbis lineatus. In profusion in Dringhouses Bog, near York.

P. nitidus. In company with the last; also at Burlington.

P. nautilæus. Ponds near York.

Var. *cristata.* Askham Bog.

P. albus. Very fine in a pond close to the precipice (430 ft.) of Bempton Cliffs; also at York.

P. spirorbis. In profusion in all ponds. Scalariiform distortion. Flambro' Head.

P. carinatus. Askham Bog, common; also Seamer Mere, near Scarbro'.

P. complanatus. Very common about York, &c.

P. corneus. Askham Bog, Strensall Common, &c.

Planorbis contortus. Askham Bog and Clifton Ings.

Physa hypnorum. A small ditch on Clifton Ings; also Burlington.

P. fontinalis. Near York and Coatham Marsh.

Limnæa peregra. Everywhere.

Var. **ovata.** Askham. Extraordinary large variety from Bempton, near Flambro'.

L. auricularia. Fine in the Foss at York.

L. stagnalis. Sometimes very abundant in Askham Bog. It appears and disappears periodically in a remarkable way. Strensall Common.

L. palustris. Small at Askham Bog. Very large and fine in a mill pond at Burlington.

Var. **decollata.** Guisborough.

L. truncatula. York, Guisborough, &c.

L. glabra. Abundant in a small ditch highly charged with iron, near Clifton, York. Ponds about York. In profusion in a pond on Flambro' Head, where the water is also quite red. This has produced decollation in many cases. A nearly white variety occurs at York.

Ancylus fluviatilis. Foss near York. Fine in the Swale at Richmond. Stunted in mountain streams near Guisborough.

A. lacustris. On the stalks of reeds in Dringhouses Bog, York. Also in the Foss.

Succinea putris. Remarkably fine on Clifton Ings, near York.

S. elegans. Same as last.

Vitrina pellucida. York. In profusion in Guisborough Woods.

Zonites cellarius. York, Guisborough, Bempton, Richmond, &c.

Zonites alliarius. The commonest shell at Guisborough. Also found at Richmond, Bempton, &c.

Z. nitidulus. Common at Guisborough, York, &c.

Z. purus. Very common at Guisborough.

Var. **margaritacea.** Equally common.

Z. radiatulus. Askham Bog and Guisborough.

Z. nitidus. Banks of the Foss.

Z. excavatus. Ouse rejectamenta at York.

Z. crystallinus. Common at York, Guisborough, &c.

Z. fulvus. Abundant at Askham Bog; also at Guisborough and Scarborough.

Helix aculeata. Common at Guisborough; also Buttercrambe Moor.

H. aspersa. Everywhere.

Var. **exalbida.** A colony at Burlington.

H. nemoralis. Everywhere. Particularly abundant and beautiful on Redcar Sandhills.

H. arbustorum. Fulford Gravel Pits, near York, and at Scarborough.

Var. **flavescens.** Dringhouses.

H. cantiana. Hedgerows near York. In great abundance on brambles near Flambro' Head. Also at Hedon near Hull.

H. rufescens. Scarce near York; common near Bempton, &c.

Var. **albida.** Danes Dike.

H. hispida and **concinna.** Common generally.

H. virgata. Burlington.

White var. Redcar Sandhills.

H. caperata. Burlington and Redcar.

Helix ericetorum. Flambro' Head.

White var. Bempton.

H. rotundata. Common everywhere.

H. rupestris. Arncliffe.

H. pygmæa. Guisborough Woods.

H. pulchella. Common at York.

Var. costata. Brotton.

H. lapicida. A wall near Rievaulx Abbey in abundance.

Bulimus obscurus. Scarborough, Speeton and Brotton.

Pupa umbilicata. Scarborough, Speeton, Guisborough, &c.

P. muscorum. Redcar sandhills in profusion; Danes Dike.

P. ringens. Scarboro' cliffs, not rare.

Vertigo pygmæa. York; Speeton.

V. substriata. Guisborough Woods, not rare.

V. edentula. Ouse rejectamenta.

V. antivertigo. Askham Bog in plenty.

V. pusilla. Guisborough, very scarce.

Balia perversa. Richmond in plenty; Saltburn.

Clausilia nigricans. Common at York, Arnecliffe, &c.

C. laminata. Rievaulx Abbey and in the Ouse rejectamenta.

Cochlicopa lubrica. Everywhere.

C. tridens. Woods at Richmond; Guisborough, scarce.

Achatina acicula. Sometimes in plenty in the Ouse rejectamenta at York.

Garychium minimum. Very common about York, Guisborough, &c.

Acme lineata. Hackness Woods, Scarboro'.



LAND AND FRESHWATER SHELLS COLLECTED
IN THE
ALLUVIUM OF THE GARONNE, FRANCE.

By ROBERT SCHARFF,

Vice-President of the Conchological Society.

During my stay at Bordeaux this year I had the opportunity of devoting some leisure hours to the study of the land and freshwater shells of the neighbourhood, belonging to the department of "La Gironde."

I am specially indebted to Dr. O. Boettger of Frankfort, who is about to write an extensive work on living and fossil *Pupæ* and who kindly drew my attention to the numerous species to be found in the alluvium of the rivers.

Now there has been a large overflow of the river Garonne this year, and I have been fortunate enough to discover some interesting species among the alluvium.

It appears that some of the *Pupæ* have been carried away by the floods for a great distance, *P. polydon*, *ringens* and *triplicata* having only been found in the department of the "Haute Garonne" and the "Pyrenees."

The following list shows the number of species collected in March and April, 1879, after the subsidence of the inundations:—

<i>Succinea putris</i> L....	...	1	<i>H. rotundata</i> Müller, ...	3
<i>Zonites fulvus</i> Müll.,	...	5	<i>H. cornea</i> Drap, ...	1
<i>Z. nitidus</i> Müll.,	...	11	<i>H. pulchella</i> Drap, ...	18
<i>Z. cellarius</i> Müll.,	...	4	<i>H. limbata</i> Drap, ...	1
<i>Z. crystallinus</i> Müll.	...	19	<i>H. carthusiana</i> Müller,	2
<i>Helix pygmæa</i> Drap,	...	2	<i>H. occidentalis</i> Recluz,	1

<i>H. hispida</i> L., 97	<i>P. Strobili</i> Gredl., ... 10
<i>H. fasciolata</i> , Poir, ... 14	Var. <i>Scharffi</i> Boettg., 6
<i>H. variabilis</i> Drap, ... 2	<i>P. claustralis</i> Gredl., ... 2
<i>H. terrestris</i> Flem., ... 3	<i>Vertigo antivertigo</i> Drap., 2
<i>H. acuta</i> Müller,... ... 2	<i>V. pygmæa</i> Drap., ... 352
<i>Bulimus montanus</i> Drap, 1	<i>V. pusilla</i> Müller, ... 2
<i>B. quadridens</i> Brug., ... 1	<i>Carychium minimum</i> Müll. 50
<i>B. decollatus</i> Brug., ... 5	<i>Planorbis complanatus</i> Stud., 9
<i>Cochlicopa lubrica</i> Risso, 28	<i>P. vortex</i> Müller, ... 49
<i>Cionella acicula</i> Jeff., ... 65	<i>P. rotundatus</i> Poir, ... 6
<i>Clausilia parvula</i> Studer, 2	<i>P. nautilus</i> Poir?
<i>C. nigricans</i> ,... .. 9	<i>P. albus</i> Müller, 5
<i>C. biplicata</i> Leach, ... 1	<i>P. contortus</i> Müller, ... 15
<i>Balea fragilis</i> Leach, ... 1	<i>Limnæa truncatula</i> Beck, 12
<i>Pupa variabilis</i> Drap., 1	<i>L. glaber</i> 2
<i>P. polydon</i> Drap., ... 1	<i>Cyclostoma elegans</i> Drap., 4
<i>P. ringens</i> Mich.,... .. 1	<i>Pomatias septemspirale</i> ... 3
<i>P. granum</i> Drap., ... 2	<i>Acme fusca</i> Beck, ... 1
<i>P. muscorum</i> Müller, ... 148	<i>Bithynia vitrea</i> Beck?
<i>P. triplicata</i> Studer, ... 2	<i>B. tentaculata</i> Gray, ... 14
<i>P. cylindracea</i> Da Costa, 2	<i>Valvata cristata</i> Müller, 1
<i>P. doliolum</i> Brug., ... 5	<i>V. piscinalis</i> Fér., ... 7
<i>P. minutissima</i> Hartm., 27	<i>Sphærium corneum</i> Scop, 4

LIST OF *CYPRÆA* FOUND IN MORETON BAY,
QUEENSLAND.

By J. BRAZIER, C.M.Z.S., Cor. M. Roy. Soc. Tas., &c.

A few remarks on Moreton Bay may be of interest to conchological readers in general. It was on the 17th of May, 1770, the celebrated circumnavigator, Captain James Cook, dropped anchor from the bows of the good ship 'Endeavour' in the waters of a large inlet on the eastern coast of Australia, to which he gave the name of 'Moreton Bay' in honor of his patron the Earl of Moreton, the then President of the Royal Society.

The bay is an extensive sheet of water separating Stradbroke and Moreton Islands from the mainland. It is about 40 miles long, north and south, and 17 miles broad. Stradbroke is 33 miles long, north and south, and 7 miles broad. Moreton Island is 20 miles in extreme length about north and south, and 5 miles in breadth near the north end.

Very few good working collectors have ever visited Moreton Island, the extensive range of long sandy beaches with large stones that can be turned over at low water spring tides. In the bay there are smaller islands and sandbanks with shoals that dredging can be carried on with but little trouble. The only person who did any good dredging in the bay was the late Mr. Fred Strange, who unfortunately lost his life in the service at Percy Island No. II., by being killed by the Aborigines.

This list is made out from those species collected by the late Mr. Charles Coxen of Brisbane, Queensland, he having paid frequent visits to various parts of the bay. He was busy arranging his valuable finds and corresponding with me up to the time of his death in July, 1876.

I am under great obligation to Mrs. Coxen in her endeavour to assist me with the use of her lamented husband's papers and notes.

CYPRÆA.

1. *Cypræa asellus* L. Bribie Island; one dead specimen found.
2. *C. felina* L. Stradbroke Island, on banks under big hill.
3. *C. carneola* L. Stradbroke Island, on the banks under big hill.
4. *C. Isabella* L. Bribie Island; one dead specimen found.
5. *C. macula* A. Ad. Stradbroke Island, on coral banks.

Subgenus ARICIA.

6. *C. annulus* L. Stradbroke Island; very common on all the banks off the island.

Mrs. Coxen says "We had at one time 800 specimens a great deal firmer in color than those figured by Mr. Sowerby in *Thes. Conch.*" I am of the same opinion, having obtained large numbers from Port Denison and Torres Straits that puts the figure of Reeve and Sowerby in the shade.

7. *C. Arabica* L. Stradbroke Island, on coral banks; common.
8. *C. caput-anguis* Phil. This species was sent for name and marked Moreton Bay; I consider Moreton Bay a very wide range. This was described by Philippi, 1849, in '*Zeitschrift für Malakozoologie*,' p. 24.

Mr. A. Garrett in this journal, ii., p. 111, states that he only found it at the Sandwich Islands. When I was at Strong Island—sometimes called Oualan and Ualan—residing for two weeks I obtained twelve living specimens and a few beach-worn, in that time I did not even find *C. caput-serpentis*. I have *C. caput-anguis* from New Caledonia, also various parts of the coast of New South Wales, for instance it is found as far south as Botany Bay, Shark Island, Port Jackson. After the great winter gale of 1868 some hundreds

were found on the beaches at Lake Macquarie, 70 miles north of Port Jackson, not a single specimen of *C. caput-serpentis* was found.

During an extended trip of six months from the Manning River, including the Macleay, Nambucera, Bellenger and Clarence River, with all intermediate small bays, creeks and headlands, *C. caput-anguis* is the predominant species, very few of *C. caput-serpentis* obtained. Some years ago I quoted *C. caput-anguis* as *C. caput-serpentis*, the former is very rarely to be found in a living state on the coast of New South Wales. I quite agree with Mr. A. Garrett, who is a close observer of genus, that it is a distinct species and need not ever be confused with *C. caput-serpentis*.

In some papers that I have from the late Mr. Harper Pease, reprints from American Journal of Conch., v., p. 85, the description of the animal differs a little from that given by Mr. Garrett. I give Mr. Pease's own words—"Compared with *caput-serpentis*, it is smaller in size, not dilated at the sides, darker in color throughout, and dorsal spots smaller. The only description of the animal of *caput-serpentis* published so far as I can discover, is that in 'Voy. d' Astrol,' from which *caput-anguis* differs as follows:—Mantle of a deep brown, shaded with dark green, its tentacular processes red or red and white. Siphon dusky, tentacles beyond the eyes light chestnut, base white. Foot pale beneath, dusky above. The tentacular fringe surrounding the end of the siphon is retractile. The colors and their arrangement agree with the type, only darker." Mr. A. Garrett's description—"The animal has a dark brown mantle, varied with dark green, and garnished with red or red and white, more or less divided processes. The siphon is dusky-slate, tentacles brown with white bases, and the foot dusky-slate with a paler creeping disk.

9. *Cypræa caput-serpentis* L. Amity Point, Stradbroke Island; few obtained.

Subgenus LUPONIA.

10. *C. angustata* Gray. Colundra, north end of Moreton Bay; one dead specimen found.

I doubt this species being found in Moreton Bay; its home is Tasmania. Not having seen the northern shell, Mr. Coxen's identification must be wrong, or Tasmanian shells may have got mixed up with Moreton Bay examples.

11. *C. caurica* L. Dunwich, Stradbroke Island; not common.
 12. *C. clandestina* L. Stradbroke Island; found on the banks under the big hill.
 13. *C. cruenta* Gmelin.=*variolaria* Lam. Burleigh Heads; one dead specimen found.
 14. *C. eburna* Barnes. Stradbroke Island; very rare.
 15. *C. erosa*. Stradbroke Island; found on coral banks.
 16. *C. erroneus* L. Stradbroke Island; common on all the coral banks.
 17. *C. flaveola* L. Stradbroke Island, on the banks under the big hill; not common. This species must not be confused with the *C. flaveola* of Lam. or Born.
 18. *C. helvola* L. Stradbroke Island, under the big hill; not common.

Mrs. Coxen sent me this named as *C. citrina*, they are both quite distinct and need not be confused. *C. citrina* is very rare, my specimen comes from Madagascar.

19. *C. lutea* Gron.=*Humphreysii* Gray. Stradbroke Island, under big hill; rare.

The specimen sent by Mrs. Coxen for my inspection is one inch in length.

20. *Cyprœa lynx* L. Stradbroke Island; rare.
21. *C. Saulæ* Gask. Peel Island; only one specimen found. This magnificent and rare species was first procured from the Philippine Islands, the specimen in my collection was obtained by a native diver at Warrior Reef, Torres Straits, 6 fathoms, found on a branch of *Millepora*.
22. *C. subviridis* Reeve. Southern end of Moreton Bay. This species is rather common on the coast of New South Wales afterly easterly gales. Common in Torres Straits and extends round to Nicol Bay on the the west coast of Australia.
23. *C. tigris* L. Peel Island; not common.
Mr. Samuel Stutchbury found a young living example, beautifully colored, at Bribie Island in 1854. This is Mr. Coxen's note.
24. *C. vitellus* L. Stradbroke Island; rather common.
25. *C. Walkeri* Gray. Peel island; two only have been found. This very rare species I obtained during the 'Chevert' Expedition to New Guinea in 1875, first at Palm Island, 11 fathoms sandy mud bottom; Cape Grenville, Northeast coast of Australia, 8 fathoms white sand; Darnley Island, Torres Straits, 20-30 fathoms white sand. I have seen a very small specimen from Nicol Bay, West Australia.
- Only this last few days I have seen two examples in the Australian Museum, dredged off Port Denison, Northeast Australia, by Mr. W. A. Haswell, M.A., B.Sc.
26. *C. xanthodon* Gray. Dunwich, Stradbroke Island, on the coral banks; rare.

This rare species was found at Watsons Bay, Port Jackson, some years ago by Mr. G. F. Angas, F.L.S. I have not been so lucky as to find it, although I have had

twenty-five years good work at both wading and dredging. At one stretch I took up the whole time of six months examining all the inlets of Port Jackson in all weathers, and up to the present have not even found a dead specimen.

I have found it in very good condition at Port Stephens, north of Port Jackson, after east and southeast gales we have obtained large numbers on the long beaches between the Macleay and Bellenger Rivers, also on all beaches and headlands intermediate between those and the Clarence River on the north. My opinion is that it is strictly a deep water shell like *C. Walkeri* and *Saulæ*, and its station of being found under stones must be very rare indeed, some of my examples from the Ninepin Head, south of the Bellenger, are nearly jet black, interior dark blue.

27. *C. ziczac* L. Peel Island; only one found.

It is interesting to know that Mr. Coxen obtained this fine and well known species in Moreton Bay, I believe it is the first recorded Australian habitat.

THE CONCHOLOGICAL FAUNA IN THE ALLUVIUM OF RIVERS; HOW TO PROCURE THE VARIOUS SPECIES AND THEIR COMPARATIVE NUMBERS.

By ROBERT SCHARFF,

Vice-President of the C. S. G. B. & I.

(Paper read before the Conchological Society of Great Britain and Ireland.)

The different kinds of land and freshwater shells yearly swept down by the floods of a river have hitherto been very little studied by conchologists, however, there can be no doubt that the results

to be obtained by examining the various materials left on the banks of a river after the subsidence of an inundation are both interesting and useful to the students of land and freshwater molluscs.

The best season for collecting the shells is a short time after the subsidence of the winter floods.—According to Dr. Kobelt, however, summer or autumn inundations bring more freshwater and fewer land shells down than winter floods, but I may state that I have not had an opportunity of confirming this statement from my own observation.

As regards the collecting part of the work, my usual practice is to walk down to the riverside provided with a few bags, as well as some small tin boxes, glass tubes, &c., and then to carefully examine the upper layers of the alluvium, generally consisting of small black seeds, bits of straw and wood, and in fact a little of everything that is light enough to float on the surface of water, besides a good many shells, *Helix hispida* being the most conspicuous.

This is not only good ground for the conchologist, but there is also much scope for the coleopterist, and I have several times been fortunate enough to collect some pretty rare beetles still alive among the shells.

After having searched for a spot where a thick layer has been accumulated, I fill my bags and take them home where I leave them near the fireside for a day or two, until their contents are perfectly dry, otherwise the smaller shells will stick to the pieces of wood and may then be easily overlooked.

Next, I spread the contents on a sheet of white paper and then proceed to carefully collect the specimens by means of a small brush.

This done, you will see that species, having the habit of living near the water like *Helix hispida*, *H. arbustorum*, *Cochlicopa lubrica*, *Cionella acicula*, *Carychium minimum* and some of the

small *Vertigines*, as well as those living in freshwater like a few of the *Planorbis*, *Bithynia tentaculata*, &c., occur in great quantities in the alluvium, whilst those which frequent higher regions are either scarce or absent.

It was in March and April this year when I first went out collecting the alluvium, and whilst separating the various species into different boxes, I looked out in vain for the very rare *Acme Simoniana*, which the distinguished conchologist Mr. Gassies of Bordeaux discovered in the alluvium of May 1856.

This diminutive shell was first classed among the *Paludina* by Moquin-Tandon, but after another careful examination of the shell the same author published it afterwards in his "Natural History of terrestrial and fluviatile molluscs of France" under the *Acme*. It has never been met with alive, so as to allow the structure of the animal to be studied.

The catalogue of the fauna of the department "la Gironde" by Gassies, published in 1859, comprising the district round about Bordeaux, enumerates 138 species.

In the book entitled the "fauna of the county of Nassau" by Dr. Kobelt, the author describes the shells he found in the neighbourhood of Frankfort in Germany. The total number of species amounts to 140, about 120 occurring in the immediate environs of the town, out of which he mentions 47 as occurring in the alluvium of the river Maine.

The alluvium of Bordeaux *i.e.* of the river Garonne yielded to me 60 species, amongst which one proved to be new to France and besides that there was an undescribed variety of a *Pupa*.

It is a very singular fact that the quantities of species taken in the alluvium of the two rivers Maine and Garonne nearly agree with one another as you will see by the following numbers:—

Alluvium of river Maine contained 47 species out of the 120 living in the environs or 0.39.

Alluvium of river Garonne contained 60 species out of the 140 living in the environs or 0.42.

One being 5/11 and the other 3/7. In fact there is scarcely any difference between the amounts of the two.

This study of the alluvium enables the conchologist to get in a very short time a pretty good notion of the fauna of the surrounding district, and I am convinced that many new species will yet be found in that manner, which may have been overlooked by the ordinary way of searching.

As regards the genus *Pupa* I found 14 different species in this year's alluvium at Bordeaux, which have been classified by Dr. Boettger, one of the greatest living authorities on *Clausilia* and *Pupa*.

In concluding this short paper, I hope, that if any new species should be discovered in English alluvia, it may be by some member of our "Conchological Society."



CATALOGUE OF THE SHELL-BEARING MOLLUSCA OF MICHIGAN.

BY BRYANT WALKER.

The following list of the land and freshwater shells of the state of Michigan embodies not only the results of my own collecting during several years past, but also the various catalogues heretofore published, and such scattered references as occur in the various scientific publications to which I have had access, and is intended to furnish as completely as possible a summary of our present knowledge of the fauna of the state.

Up to this time there have been published three general lists

of the shells of the state, and three of the species of particular districts.

Dr. Abram Sager, Zoölogist of the Geological Survey, published the first catalogue in 1839.

The second, a very complete list, by Dr. M. Miles, State Zoölogist, was published in the "Report of the Geological Survey for 1860."

And in 1868 Mr. A. O. Currier, at the request of the Kent Scientific Institute of Grand Rapids, Michigan, compiled a "List of the Shell-bearing Mollusca of Michigan, especially of Kent and adjoining counties."

Mr. Currier had already published in 1859 a "List of the Shells collected in the Grand River Valley." As this list however was undoubtedly included in his later catalogue, the few particulars in which they differ are not mentioned in present list, and all references are to his catalogue of 1868.

In the "Report of the United States Fish Commission for 1872-3," Mr. Sydney J. Smith in a "Sketch of the Invertebrate Fauna of Lake Superior" gives a list of the mollusks of that region, which while largely a compilation from the publications of Binney and Gould, includes the results of a series of dredgings made under the direction of the United States Lake Survey, and is especially valuable in showing the depths at which the various species were found. A preliminary report of the same dredgings are published in vol. 2 of the "Report of the Secretary of War for 1871."

In 1875, at the request of the Ann Arbor Scientific Association, Mr. C. E. Beecher and myself compiled a list of the species found in the immediate vicinity of Ann Arbor, Michigan, which was published in the Proceedings of the Association for 1875-6.

In the main, however, the present list is based on my own collection, and unless special reference is made to some published

authority it will be understood that all the species cited are represented in my cabinet by Michigan specimens. It may be well to add that while my own collecting has been done principally in the southeastern portion of the state, I have received several small collections from the northern part of the lower peninsula, and am especially indebted to Mr. L. H. Streng of Grand Rapids, for a very complete set of the shells of the western part of the state, including a number of species that I have not met with myself.

It is much to be regretted that there is no published account of any collections made in the northern peninsula; and while the species described in Agassiz' "Lake Superior" from the north shore have been quoted by Currier and are given in the present list, on account of the probability that they will be found on the southern shore also, yet in regard to most of them, there is no authentic record of their occurrence within the boundaries of the state. The recent discovery of one of these species in the northern part of the lower peninsula certainly tends to verify the supposition, and indeed there can be no doubt but that as the various portions of the state, especially the northern and southern borders are more thoroughly explored, many hitherto unrecorded species will be added to our fauna.

Macrocyclis concava Say.

Zonites fuliginosus Griff.

Z. ligerus Say.

Z. inornatus Say. Miles, Currier.

Z. cellarius Müll. About two years ago I found a few specimens of this species in a green-house in Detroit. It is the first time I believe that it has been detected in the state.

Z. nitidus Müll.

Z. arboreus Say.

Z. viridulus Mke.

Z. indentatus Say.

Zonites limatulus Ward. Miles, Currier.

Z. minusculus Binn.

Z. Binneyanus Morse. Binney.

Z. exiguus Stimp. Currier, Binney.

Z. fulvus Drap.

Z. suppressus Say. Binney.

Z. multidentatus Binn. Currier.

Helix solitaria Say. This species is very scarce in the eastern part of the state, but appears to be quite common in the western portion. In the neighborhood of Ann Arbor it has apparently died out entirely. Although dead, bleached specimens are quite common, yet in several years collecting in that vicinity I was unable to obtain a single living specimen, and other collectors were equally unsuccessful. Several years ago Mr. A. B. Lyons of Detroit, found a few living individuals in a single locality, some of which are deposited in the museum of the Detroit Scientific Association.

Helix alternata Say.

H. „ var. **alba.** Currier.

H. striatella Anth

H. asteriscus Morse.

H. labyrinthica Say.

H. hirsuta Say.

H. monodon Rackett.

H. „ var. **fraterna** Say.

H. „ var. **Leaii** Ward.

H. palliata Say.

H. „ var. **alba.** Currier.

H. inflecta Say.

H. tridentata Say.

H. fallax Say.

H. albolabris Say.

H. „ var. **dentata.**

Helix multilineata Say.

H. „ var. **unicolor.** Currier.

H. „ var. **albina.**

H. elevata Say. Cited in all the catalogues. I have never found living specimens in the eastern part of the state. It occurs in the recent deposits at Ann Arbor, and the history of the species there seems to be the same as that of *H. solitaria*.

Helix exoleta Binn.

H. thyroides Say.

H. clausa Say. Miles, Currier.

H. profunda Say.

H. „ var. **albina.**

H. Sayii Binn. Miles, Currier.

H. pulchella Müll.

Ferussacia subcylindrica L.

Pupa pentodon Say.

P. fallax Say.

P. armifera Say.

P. contracta Say.

Vertigo Gouldii Binn.

V. milium Gld.

V. ovata Say.

V. simplex Gld.

Succinea ovalis Gld, not Say.

S. Higginsi Bld. I have received specimens under this name from Alpena, Michigan. They lack the characteristic parietal tooth and may not be authentic. As the type specimens were found at Put-in-Bay Island, Lake Erie, it is very probable that the species occurs in this state.

S. Peoriensis Wolf. This species, which occurs very abundantly in the eastern portion of the state, is not mentioned in W. G. Binney's last volume, and I do not know whether any

description has ever been published. It is related to *S. ovalis*, Gld., but is apparently very distinct.

Succinea avara Say.

S. obliqua Say.

S. campestris Say. Sager, Miles. As this species is strictly a southern one, the citation is undoubtedly erroneous. Some form of *S. obliqua* is probably referred to.

Carychium exiguum Say.

Limnæa stagnalis L.

L. ampla Migh.

L. decollata Migh.

L. columella Say.

L. megasoma Say. Commonly cited from Lake Superior. In the museum of the University of Michigan are specimens from Drummond's Island at the head of Lake Huron. Its occurrence within the state is thus definitely established.

Limnæa reflexa Say.

L. „ var. **zebra**, Tryon.

L. „ var. **distortus** Ross.

L. „ var. **exilis** Lea.

L. desidiosa Say.

L. emarginata Say.

L. catascopium Say.

L. caperata Say. Miles, Currier, Smith.

L. pallida Ad.

L. humilis Say.

L. lanceata Gld. Gould, Currier, Smith.

L. intertexta Currier, MSS. Currier.

L. contracta Currier, MSS. Currier.

Physa Lordi Baird. Inhabits the northern part of the state. Houghton Lake specimens were described as *P. Parkeri* Currier.

Physa gyrina Say.

P. „ var. **Hildrethiana** Lea.

P. Sayii Tappan.

P. vinosa Gld. Gould, Miles, Currier, Smith.

P. ancillaria Say.

P. heterostropha Say.

P. Showalterii Lea.

P. Warreniana Lea. Currier.

P. oleacea Tryon. Currier.

P. deformis Currier. Currier.

Bulinus hypnorum L.

B. Tryoni Currier. Currier. “This may prove an extreme form of the above (*B. hypnorum*)”

Bulinus integer Hald. Currier.

B. Niagarensis Lea.

Planorbis lentus Say. Miles.

P. campanulatus Say.

P. „ var. **minor**. Currier.

P. multivolvis Case. This remarkable species was discovered in the northern part of Michigan. The exact locality is not known and apparently none but the type specimens have ever been found. It is to be hoped that, when the northern part of the state is more thoroughly explored, this long-lost species will be brought to light again.

Planorbis trivolvis Say.

P. truncatus Miles, Miles, Currier.

P. bicarinatus Say.

P. „ var. **corrugatus** Currier.

P. exacutus Say.

P. deflectus Say.

P. albus Müll.

P. parvus Say.

Segmentina armigera Say.

Ancylus fuscus Ad. Miles, Currier.

A. parallelus Hald.

A. tardus Say.

Valvata tricarinata Say.

V. „ var. **simplex**

V. sincera Say.

V. striata Lewis. Currier. This species is referred to the preceding by Binney. Currier considers it distinct and, as the specific name "*striata*" is preoccupied, suggests that of "*Lewisii*."

V. humeralis Say. Miles. This is a Mexican species and the reference is without doubt erroneous.

Vivipara contectoides Binn. Binney. Haldeman.

Melantho ponderosa Say. Sager. Miles. Currier.

M. decisa Say.

M. „ var. **melanostoma** Currier, MSS.

M. integra Say.

M. rufa Hald.

M. obesa Lewis.

M. Milesii Lea. Lea, Currier. Type specimens from Antim County, Michigan.

Somatogyrus isogonus Say. Miles, Currier.

Amnicola porata Say.

A. pallida Hald.

A. lustrica Say.

A. limosa Say.

A. Cincinnatiensis Anth.

A. grana Say.

Pomatiopsis lapidaria Say.

P. Cincinnatiensis Anth. This species was cited in the catalogue of Ann Arbor shells on the authority of Mr. Beecher.

Pleurocera elevatum Say.

P. neglectum Anth.

P. subulare Lea.

Goniobasis livescens Mke.

G. Milesii Lea. Type specimens from Tuscola County Michigan.

G. depygis Say. Sager. As this species does not appear in any of the later lists, the citation is perhaps erroneous and may refer to a form of *G. livescens*.

G. pulchella Anth. Miles, Tryon.

G. virginica Gmel. Sager, Miles. This species is purely an eastern one and the reference is no doubt erroneous. As *P. subulare* is not quoted in either of the above lists, it may have been the species intended.

Unio alatus Say.

Unio asperrimus Lea. Miles, Currier.

U. cælatus Con. Sager, Miles. Undoubtedly erroneous as the species is a southern one.

U. Canadensis Lea.

U. cariosus Say. Sager, Miles. Very doubtful.

U. circulus Lea.

U. coccineus Lea.

U. complanatus Sol. Sager, Miles. Evidently a mistake as the species is confined to the east.

U. cornutus Bar. Currier.

U. elegans Lea. Miles, Currier.

U. ellipsis Lea.

U. ellipsiformis Con. This species is described and figured by Conrad in his Monograph as from Michigan. Nothing more is known about it. It is placed among the species unknown to him by Dr. Lea in his last Synopsis and must remain in uncertainty until re-discovered or identified by some fortunate collector.

U. gibbosus Bar.

U. glans Lea. Miles, Currier. A very rare species in this state. The only locality from which it is recorded is at Pontiac

where it was found nearly twenty years ago.

Unio gracilis Bar.

U. iris Lea. Sager, Miles, Currier. This species is of rather questionable occurrence in this state. It appears in all the lists, but has probably been confounded with *U. Novi-Eboraci*, a closely allied species.

U. lævissimus Lea.

U. Leibii Lea. I obtained a single specimen of this rare species several years ago from the Detroit river.

U. ligamentinus Lam.

U. luteolus Lam.

U. multiradiatus Lea.

U. nasutus Say.

U. Novi-Eboraci Lea.

U. occidentis Lea.

U. penitus Con. Sager, Miles. A southern species and evidently an error in identification.

U. perplexus Lea. The form of this species found in the Detroit river has been described as var. *perobliquus* by Conrad in his Monograph.

U. phaseolus Hild.

U. pustulatus Lea.

U. pustulosus Lea. Sager, Miles.

U. radiatus Lam. Cited by Currier as *U. distans* Anth. Anthony's species was from Ohio and is referred to *radiatus* by Mr. Lea.

U. Rangianus? Lea. Several years ago I found a single female specimen in the Detroit river, which has been referred to this species. The identification is not my own and may be doubtful.

U. rectus Lam. Two forms of this species from Michigan waters have been described as distinct. One from the Detroit river as *U. Sageri* by Conrad and the other from Livingston

County as *U. leprosus* by Miles.

Unio rubiginosus Lea.

U. Schoolcraftii Lea.

U. spatulatus Lea.

U. subovatus Lea. Miles, Currier.

U. subrotundus Lea. Sager, Miles.

U. tenuissimus Lea. Miles, Currier.

U. trigonus Lea. Miles, Currier.

U. triangularis Bar.

U. undulatus Say. Sager, Miles.

U. ventricosus Bar.

Margaritana complanata Bar.

M. deltoidea Lea.

M. Hildrethiana Lea.

M. marginata Say.

M. rugosa Bar.

M. undulata Say. Sager. Undoubtedly an error as the species is an eastern one.

Anodonta Benedictii Lea.

A. decora Lea. Anthony, Currier. Among the *Anodons* from this state described as new species by Anthony, one form, *A. inornata*, is referred to this species by Mr. Lea.

A. edentula Say. Our most abundant species, and like all our *Anodons* extremely variable. A well marked variety occurring in the small lakes in the interior of the state has been described as *A. rhombica* Anth.

A. Ferussaciana Lea. Sager, Miles, Currier.

A. fluviatilis Dill. Sager, Miles. As the species is an eastern one, the citation is evidently erroneous.

A. Footiana Lea. A very abundant and variable species. Two forms have been described as distinct by Anthony, *i.e.*, *A. McNeilii* and *A. opalina*.

A. fragilis Lam. A very common species and extremely variable. No less than five forms (*A. flava*, *glandulosa*, *imbricata*, *irisans*, and *pallida*) have been described as distinct by Anthony and one (*A. subcarinata*), by Currier.

A. imbecilis Say.

A. Marryatana Lea. *A. subinflata* Anth. and *A. Houghtonensis*, Currier, MSS., are forms of this species.

A. modesta Lea. Purely a Michigan species. The type specimen was found near Kalamagoo and the species has since been found in other localities in the state.

A. ovata Lea. One of Anthony's varieties, *A. subangulata*, is considered a form of this species.

A. Pepiniana Lea. Miles.

A. plana Lea.

A. salmonia Lea.

A. Schafferiana Lea. Miles, Currier.

A. subcylindracea Lea.

A. subglobosa Anth. Anthony, Currier. Of twelve varieties of Anodonta from this state described by Anthony as new species, this is the only one considered as valid by Mr. Lea in his last Synopsis.

Sphærium sulcatum Lam.

S. aureum Prime. Prime, Currier. The typical specimens of this species are doubtfully referred to Lake Superior by Prime. If that be the fact, the species will probably be found in the northern part of the state.

S. solidulum Prime.

S. striatinum Lam.

S. rhomboideum Say.

S. fabale Prime.

S. occidentale Prime.

S. emarginatum Prime. Prime, Currier. (Lake Superior)

S. flavum Prime. Prime, Currier. (Lake Superior.)

S. partumeium Say.

S. Jayanum Prime. Originally described from Lake Superior. In the summer of 1875 I obtained a single specimen at Houghton Lake, Roscommon county. Its actual occurrence in the state is thus made certain.

S. transversum Say.

S. secure Prime.

S. truncatum L.

Pisidium virginicum Bourg.

P. Adamsi Prime. Prime, Currier.

P. æquilaterale Prime.

P. compressum Prime.

P. variabile Prime.

P. abditum Hald.

P. „ var. **abyssorum** Stimpson MSS. Smith.

A "very small translucent form" from the great lakes. Originally obtained in the deep waters of Lake Michigan. According to Smith it has been dredged from a depth of 159 fathoms in Lake Superior.



DESCRIPTIONS TO TWO SPECIES OF *HELICIDÆ*
FROM MADAGASCAR,

By EDGAR A. SMITH, F.Z.S.,

Zoological Department British Museum.

The list of species of Madagascar land shells is, I conclude by no means yet complete, for almost every collection of any size which reaches this country appears to present a few novelties. The two forms about to be described were collected by two gentlemen, the Rev. W. D. Cowan and Mr. C. Shaw, engaged in missionary labour, out of respect for whom I have much pleasure

in associating with their names their own respective discoveries. The *H. Covani* is especially interesting as very closely representing in the eastern hemisphere a form occurring in Chilli.

In addition to this *Helix* the British Museum obtained from Mr. Cowan a fine example of the species originally described by Shuttleworth under the name of *Spiraxis eximia*, and more recently by Angas in the 'Proceedings of the Zoological Society for 1877,' as *Bulimus balstoni*. In the second part of Shuttleworth's 'Notitiæ Malacologicæ' (p. 13), it is placed in the genus *Columna*, which location is sanctioned by Pfeiffer in vol. viii. (p. 252) of his 'monographia Heliceorum.' It does not however appear to me to be conveniently placed, and its character in my judgment is rather that of *Stenogyra*.

Helix (Macrocyclis) Covani.

Shell broadly and openly umbilicated, moderately thick, orbicularly depressed, lightish-brown becoming more olivaceous upon the spire, decussately sculptured with fine spiral striæ and oblique lines of growth producing a subgranulated surface. Spire depressed, with slightly convex outlines and a somewhat raised apex. Whorls 5-5½ in., rather convex, enlarging moderately slowly and separated by an impressed suture. Last volution large, rounded at the periphery, a little descending and compressed anteriorly, more feebly sculptured beneath, except within the umbilicus, than above, and exhibiting no trace of an angulation around the umbilicus. The latter is open and perspective to the apex. Aperture oblique, white. Peristome subsimple; its upper margin prominent in the middle, thin, apparently scarcely expanded, collumellar edge slightly thickened, expanded and reflexed. Greatest diameter 36 mill., smallest 30, altitude (resting upon its base) 16 mill.

This species is very like the Chilian *H. laxata*. The general form is the same, and the open character of the umbilicus is similar and the absence of any angulation in that region upon the

whorl separates this from all the Madagascar species of the *Ampelita* group of Helices. Only a single specimen was collected by Mr. Cowan and from this I cannot say to what extent the upper margin of the peristome may at times be expanded, for in this particular part the shell is somewhat imperfect.

Helix (Ampelita) Shavi.

Shell thinnish, with a funnel-like umbilicus, orbicular, very flat above, very acutely keeled, sculptured with oblique subflexuous lines of growth and most minute spiral striæ, and exhibiting, especially upon the upper surface an irregular fine granulation. Epidermis yellowish-olivaceous, thin. Spire very little raised, with the apex sunk below the penultimate whorl. Volutions four, the three first feebly convex, the last very sharply carinated above the middle, visibly concave on each side of the keel, with a brown line at the suture and with or without a stripe of the same colour upon the carina. Beneath it is only a little convex, and forms with the umbilicus which is stained with violet brown, a decided angulation. Towards the aperture it suddenly descends from the carina about $3\frac{1}{2}$ millimeters. Aperture transverse, horizontal, white, exhibiting the sutural brown band and that at the periphery, when present. Peristome more or less stained with violet brown, everywhere reflexed, the extremities much converging, upper margin oblique, straightish, lower regularly curved forming an angle at the outer extremity. Columella slopingly arcuate, violet-brown. Greatest diameter 27 mill., smallest 22., altitude 12.

This species has the general facies of *H. xystera* or *H. Cazenaretti*, both inhabiting Madagascar. The former is a larger species, more widely umbilicated, with a non-descending last whorl and a malleated upper surface. The latter, also possessing the two last mentioned characteristics, is more narrowly umbilicated, more solid, and in fact appears to differ but very slightly from *H. lancula*.

LIST OF THE AUSTRALASIAN *VOLUTES*.

By W. F. PETTERD.

1. *Voluta mamilla* Gray.

Habitat—Kangaroo Island, South Australia; Lake Macquarie Heads, New South Wales; North coast of Tasmania from Tamar Heads to the Duck River.

The largest and perhaps the rarest species of this exquisite genus. I have collected several fine examples washed ashore after heavy gales, notably two of very large size at Port Sorell near Tamar Heads.

2. *V. magnifica* Chem.

Habitat—Middle Harbour, Port Jackson, New South Wales, north to Wide Bay, Queensland.

Another fine species much resembling the preceding both in form and coloration. At the Brunswick River Heads I obtained several beautiful specimens.

3. *V. pulchra* Sowerby.

Habitat—Lady Elliott's Island and Heron Island, N. E. Australia; reefs off Port Denison, Queensland.

I have obtained a great number of specimens of this beautifully colored form from the first locality, although it is anything but abundant.

Variety—*Wisemani* Brazier.

Habitat—Northeast Australia. Obtained with the typical form.

4. *V. punctata* Swainson.

Habitat—Manly Beach, New South Wales to Moreton Bay, Queensland.

Rarely obtained in a perfect condition. I obtained a few moderately good examples on the beach between the Richmond and Tweed Rivers after a very heavy gale.

5. *Voluta nivosa* Lamarck.

Habitat—Western Australia, as far north as Sharks Bay.

Variety—*Norrisii* Sowerby.

Habitat—Nicol Bay, Tien Tsin, Flying Foam Passage, and Camden Harbour, Northwest Australia.

Variety—*Sophia* Gray.

Habitat—Warrior Reef and Darnley Island, Torres Straits. Port Essington, North coast.

6. *V. maria-emma* Gray.

Habitat—Northwest Australia.

7. *V. fusiformis* Swainson.

Habitat—Broken Bay, New South Wales. Tasmania.

Although this fine species is generally distributed around the coast of this island, its home seems to be at Circular Head, where it reaches its greatest size and after gales is very abundant. Some few years back, after a very heavy storm, I obtained some hundreds of specimens on the Black River Beach; many of these were over 7 inches in length. On the southern coasts it is much smaller, rarely attaining 5 inches in length.

8. *V. piperata* Sowerby.

Habitat—Rubiana, Solomon Archipelago.

Variety—*Ruckeri* Crosse.

Habitat—Florida, Isabel, Savu, Shortland and Bouganville Islands, Solomon Archipelago.

At the two first mentioned islands I obtained a great number of specimens from the natives, who collect them on the coral reefs skirting the coast,

Variety—*Macgillivrayi* Cox.

Habitat—Woodlark Island.

This attractively colored variety is often brought to Hobart Town by the crews of whaling vessels.

9. **Voluta Deshayesi** Reeve.
Habitat—North coast of New Caledonia.
10. **V. rutila** Broderip.
Habitat—Northeast Australia. Torres Straits.
Variety—*innexa* Reeve.
Habitat—Louisiane Islands.
11. **V. Zebra** Leach.
Habitat—Botany Bay, New South Wales, to Moreton Bay, Queensland.
Very abundant at the Richmond River Heads.
Variety—*lineata* Leach.
Habitat—Moreton Bay to Port Denison, Queensland.
12. **V. volva** Chemnitz.
Habitat—Northwest coast, Australia.
13. **V. undulata** Lam.
Habitat—South Australian coast.
Variety—*Angasi* Sowerby.
Habitat—Port Jackson and Port Stephens, New South Wales, Victoria, Islands in Bass's Straits, Tasmania.
Variety—*Kingi* Cox.
Habitat—Flinders Island, Bass Straits.
Variety—*Slateri* Cox.
Habitat—Flinders Island, Bass Straits.
Variety—*Australiae* Cox.
Habitat—Victoria.
14. **V. exoptandra** Sowerby.
Habitat—Port Elliott, South Australia.
15. **V. reticulata** Reeve.
Habitat—Ashburton River, Tien Tsin Creek, Western Australia.
Variety—*Reevei* Sowerby.
Habitat—Northwest coast, Australia.

16, *Voluta Turneri* Gray.

Habitat—North Australia.

Variety—*Jamracki* Gray.

Habitat—Northwest coast, Nicol Bay.

Variety—*Ellioti* Sowerby.

Habitat—Northwest Cape, Tien Tsin, Barrow Island,
Northwest coast.

Variety—*Loroisi* Vallen.

Habitat—Islands off Fortescue River, Western Australia.

17. *V. prætexta* Reeve.

Habitat—Tien Tsin Creek, Flying Foam Passage,
Dolphin Island, Northwest Australia.

18. *V. maculata* Swainson.

Habitat—Port Curtis, Port Denison, Lady Elliot's
Island, Northeast Australia.

19. *V. Harfordi*, Cox.—*V. canaliculata* McCoy.

Habitat—Broad Sound, Northeast Australia (Brazier)
Wreck Reefs.

I obtained the type specimens from the last mentioned
locality where it is extremely rare, and when found it is
generally broken on the lip. Dr. Cox and Prof. McCoy
obtained their specimens from Mr. R. Thatcher, to whom I
gave several examples.

20. *V. papillosa* Swainson.

Habitat—North coast of Tasmania, Encounter Bay,
South Australia. Off coast of New South Wales, between
Montague Island and Twofold Bay, dredged in 1,900
fathoms (Brazier).

Variety—*Macquariensis*.

Shell same form and size as typical but of a more or less
intense yellow colour throughout without any markings.

Habitat—Macquarie Harbour, west coast of Tasmania.

21. *Voluta fulgetrum* Broderip.

Habitat—Encounter Bay and Spencer's Gulf, South Australia.

22. *V. flavicans* Gmelin.

Habitat—Port Essington, North Australia, Katow. New Guinea.

Variety—*Tissotiana* Crosse.

Habitat—Port Essington, Liverpool River and Crocodile Reef, North Australia.

23. *V. Rossiniana* Bernardi.

Habitat—Isle of Pines, New Caledonia.

24. *V. marmorata* Swainson.

Habitat—Port Jackson, New South Wales, to Moreton Bay, Queensland.

I have obtained some very fine examples near the Tweed River Heads.

25. *V. mitriformis* Lamarck.

Habitat—Port Lincoln, South Australia, King's Island, Bass Straits, North coast of Tasmansia.

Specimens from the last given locality are generally paler in color than those from the mainland.

26. *V. nucleus* Lamarck.

Habitat—Newcastle, New South Wales, Norfolk Island and Lord Howe's Island.

27. *V. deliciosa* Montrouzier.

Habitat—New Caledonia.

28. *V. Kreusleræ* Angas.

Habitat—Glenelg, South Australia.

29. *V. Thatcheri* McCoy.

Habitat—Bampton Reefs, north of New Caledonia.

Specimens of this rare and beautiful species are often brought to Hobart Town by the whaling vessels.

30. ***Voluta pacifica*** Solander.
 Habitat.—North Island of New Zealand.
 Variety—*gracilis* Swainson.
 Habitat—With typical form.
31. ***V. Brazieri*** Cox.
 Habitat—Clarence River, New South Wales.
32. ***V. coniformis*** Cox.
 Habitat—Nicol Bay, Northwest Australia.
33. ***V. Hargravesi*** Angas.
 Habitat———?
34. ***V. Bednalli*** Brazier.
 Habitat—Port Darwin, North coast Australia.
35. ***V. Kirki*** Hutton.
 Habitat—New Zealand. (?)

BIBLIOGRAPHY.

1878.

Adami (G. Batt.)—**Terrestrial and fluviatile Mollusca of the Oglio Valley in the province of Brescia, &c.**—Molluschi terrestri e fluviatile viventi nella Valle d'Oglio, ossia nelle valle Camonica, di Scalve e di Borlezza, spettanti alle provincie di Brescia e Bergamo.—Atti della Società Veneto-Trentina di Scienze Naturali residente in Padova, 1876, vol. v., fasc. I., with 1 plate.

Balguerie (Alfred.)—and **Benoist** (Andrè Emile.)—**Lists of fossils from Pessac near Bordeaux.**—Comptes Rendus, Soc. Linn. Bordeaux, 1878, xxxii., pp. 8 and 9.
 Lists of 88 species are given and remarks on their discovery and position.

Barrois (J.)—**Embryology of Bryozoa.**—Amer. Nat., Sept. 1878, xii., 617 to 620, and woodcuts.

A review of M. Barrois.—Recherches sur l'Embryologie des Bryozoaires Lille 1877, 4to, 305 and 16 plates.

Benoist (Andrè Emile.)—Description of a new fossil Truncatella.—Comptes-Rendus, Soc. Linn. Bordeaux, 1878, xxxii. pp. 4. and 5.

Truncatella Wattebledi Ben., from Mèrignac near Bordeaux.

The genus appears to have been previously unknown in the south west of France.

Benoist (Andrè Emile.)—Marniere du Haute-Livrac.—Comptes Rendus, Soc. Linn. Bordeaux, 1878, vol. xxxii., p. 10.

Characterized by the abundance of *Donax transversa*.

Benoist (Andrè Emile.)—On the genus Mesostoma.—Sur le genre Mesostoma.—Comptes Rendus, Soc. Linn. Bordeaux, 1878, vol. xxxii., pp. 17 and 18

Six species known in the miocene ; 4 of them in the inferior and 2 in the middle miocene.

Benoist (Andrè Emile.)—On Pholas dimidiata and P. Branderi.—Comptes Rendus, Soc. Linn. Bordeaux, 1878, vol. xxxii., p. 18.

Benoist (Andrè Emile.)—List of Fossil Shells from Uzeste.—Etude des Terrains d'Uzeste aux carrières d'Illon.—Comptes Rendus, Soc. Linn. Bordeaux, 1878, vol. xxxii., p. 55 and 56.

The list includes 31 species of mollusca.

Benoist (A. E.)—On several species of Fossils from Gaas.—Sur plusieurs espèces de fossiles des marnières de Gaas.—Comptes Rendus, Soc. Linn. Bordeaux, 1878, vol. xxxii., p. 61.

Various shells cited.

Benoist (Andrè Emile.)—Fossils of the Gironde.—L'Etage Tortonien dans la Gironde.—Comptes Rendus, Soc. Linn., Bordeaux, 1878, vol. xxxii., p. 85-90.

Several very long lists of fossils are given.

Boettger (Dr. O.)—The Fauna of the Thuringian Forest.
—Zur Schneckenfauna des Thüringer Waldes und der südlich
angrenzenden coburgischen und meiningen'schen Gebiete.—
Nachrichtoblat d-dents., Mal. Ges. Jan. 1871, x 1-3.

Seven different localities are mentioned as having been
collected at. The last includes 4 *Hyalinæ*, 2 *Patula*, 10 *Helices*,
a *Buliminus*, a *Clausilia*, a *Cionella*, 2 *Pupæ*, 2 *Succineæ*, and a
Lymnæa.

**Brazier (John, C.M.Z.S.)—Description of seven new
species of Terrestrial and Marine Shells from Aus-
tralia.**—Proc. Linn. Soc., New South Wales 1878, iii, 77
to 81.

Helix Bebias; *H. Zebina*; *H. Bala*; *H. Mazee*; *H. Nicomede*;
and *H. Beddomæ*; all from various localities in Queensland; and
Voluta Bednalli from Port Darwin.

**Brazier (John, C.M.Z.S.)—Mollusca of the Chevert Ex-
pedition continued.**—Proc. Linn. Soc., New South Wales
1878, iii, 155.

Turbo (Gibbula) supragranosus Smith, various localities cited.

**Brazier (John, C.M.Z.S.)—Notes and remarks on Mollusca
recently found in Port Jackson and New Cale-
donia.**—Proc. Linn. Soc., New South Wales 1878, ii, 369
to 371.

These notes refer to *Haliotis parva* L., and its congeners,
Dentalium lubricatum Sow., *Anatina Angasi* (Crosse and Fischer),
Panopæa Australis Sowerby, all from New South Wales, and
Broderipia iridescens (Broderip) from New Caledonia.

**Brazier (John, C.M.Z.S.)—Continuation of the Mollusca
of the Chevert Expedition.**—Proc. Linn. Soc., New
South Wales 1878, ii, 368 and 369.

One species of *Fusus*, 4 of *Pleurotoma*, 2 of *Acus*, 1 *Cerithium*
(s. g. *Colina*), and 1 *Hipponyx* are enumerated.

Brock (J.)—On the Sexual Organs of the Cephalopoda.—
First contribution.—Zeits. f. Wissensch. Zool. xxxii, part I.
(issued Dec. 19, 1878), 4 plates.

Butterell (J. Darker.)—*Helix rotundata* var. *alba* at Hessele near Hull.—Hobkirk and Porritt's Naturalist, Sept. 1878, iv. 25.

Five specimens taken.

Butterell (J. Darker.)—List of the Land and Freshwater Mollusca of Hull and Vicinity.—Hobkirk and Porritt's Naturalist, Dec. 1878, iv., 70 to 72.

The list includes of *Sphærium* 2, *Pisidium* 4, *Anodonta* 2, *Neritina* 1, *Bythinia* 2, *Hydrobia* 1, *Valvata* 2, *Planorbis* 9, *Physa* 2, *Lymnæa* 5, *Ancylus* 1, *Arion* 2, *Limax* 4, *Succinea* 2, *Vitrina* 1, *Zonites* 8, *Helix* 18, *Bulimus* 1, *Pupa* 2, *Clausilia* 3, *Achatina* 1, and *Carychium* 1, species and varieties.

Calkins (W. W.)—Note on *Ranella clathrata* Gray.—Amer. Nat., Feb. 1878, xii., 124.

Collected at Cedar Keys, Florida: not before known for the eastern coast, *R. caudata* being the usual form and abundant in Florida.

Call (R. Ellsworth.)—Mode of Distribution of Freshwater Mussels.—Amer. Nat., July 1878, xii., 472 and 473.

Unio rubiginosus Lea, *U. gibbosus* Barnes, and *U. pressus* Lea, are the subjects of this note. The first two are western species, introduced to the east by means of the Erie Canal. The latter otherwise a western species occurs in a small lake in New York State, and the problem is, how has it been introduced.

Call (R. Ellsworth.)—*Buccinum undatum* L.—Amer. Nat., June 1878, xii., 397.

Collected at Stonington, Connecticut.

Clessin (S.) A new *Vitrella*.—Eine neue *Vitrella*—Nachrichtsblatt d. deuts., Mal. Ges., Jan. 1878. X. 9-10.

V. Tschaepcki.

Conacher (John, Junr.) *Limax tenellus* and *Anodonta cygnea* var *incrassata*, in Scotland.—Hobkirk and Porritt's Naturalist, July 1878, iii., 177 and 178.

Both forms were found at Irvine in Ayrshire, and the first-named also in the island of Bute.

Coues (Dr. Elliott) and **Yarrow** (Dr. H. C.)—**Notes on the Natural History of Fort Macon, N.C., and vicinity (No. 5)**—Proc. Acad. Nat. Sci. Philad. 1878, pp. 297 to 328.

A list of mollusca is given at pp. 301 to 304, including an *Ommastrephes*, a *Loligo*, an *Acus*, an *Anachis*, a *Columbella*, a *Cerithiopsis*, an *Eulima*, a *Strombus*, a *Mitra*, 2 *Marginellæ*, a *Porcellana*, a *Scalaria*, a *Crepidula*, a *Littorina*, a *Volva*, an *Utriculus*, a *Styliola*, a *Teredo*, a *Zirphæa*, a *Donax*, a *Glycimeris* (*Panopæa*), a *Mya*, a *Saxicava*, a *Tottenia*, a *Chione*, a *Lucina*, an *Argina*, a *Modiolaria*, a *Modiola*, a *Pinna*, a *Crassatella*, a *Molgula*, a *Cynthia*, and an *Amarœcium*, and 17 species of the following genera of *Polyzoa*:—*Crisia*, *Amathia* (2), *Vesicularia*, *Ætea*, *Bugula*, *Acamarchis*, *Membranipora* (2), ? *Cupularia*, *Biflustra*, *Hippothoa* (3), *Cellepora*, *Lepralia* and *Discopora*.

Crane (Miss Agnes.)—**Recent and Fossil Cephalopoda**.—Geol. Mag. Nov. 1878.

Crane (Miss Agnes.)—**The General History of the Cephalopoda, Recent and Fossil**.—8vo., pp. 16, Brighton, 1878.

Crana (Miss Agnes.)—**The General History of the Cephalopoda, Recent and Fossil**.—Geol. Mag., Nov. 1878, New Ser. Decade II., vol. v., p. 487 to 499.—Brighton and Sussex N. H. S.

Crowther (Henry).—**Whitby**.—Hobkirk and Porritt's Naturalist, Dec. 1878 and Jan. 1879, iv. 73-74, and 81 to 85.

Discursive notes on various mollusca—land, freshwater and marine, found at this part of the Yorkshire coast. At the conclusion priority is claimed for the discovery of the occurrence of *Tectura testudinalis* in Yorkshire, and the consequent extension of its geographical range southward.—This however is not a new fact, having been several times before recorded, notably by Dr. Jeffreys

in the 5th vol. of his standard work.

Crowther (Henry).—*Unio margaritifer* at Whitby.—
Hobkirk and Porritt's Naturalist, Oct. 1878, iv. 40.

Occurred in company with the var. *sinuata* Lam., in the river Esk.

Dale (C. W.)—List of land and freshwater mollusca of Glanville's Wootton parish, Dorsetshire.—In the History of Glanville's Wootton, in the county of Dorset, including its Zoology and Botany.—London, 1878, pp. 331 to 334.

The molluscan fauna of this parish hardly appears to have been thoroughly investigated, as Mr. Dale's list only includes 39 species, of which 2 are *Sphærium*, 2 *Pisidium*, 1 *Unio*, 1 *Bythinia*, 1 *Valvata*, 7 *Planorbis*, 2 *Physa*, 2 *Lymnæa*, 1 *Ancylus*, 1 *Succinea*, 3 *Zonites*, 8 *Helix*, 1 *Bulimus*, 2 *Pupa*, 1 *Vertigo*, 1 *Cyclostomus*, 1 *Arion* and 3 *Limax*.

Dale (C. W.)—History of Glanville's Wootton including its Zoology and Botany.—Crown 8vo., 2 photos. 12s., Hatchards, 187, Piccadilly, Sept. 1878.

Fielden (H. W.)—The Land and Freshwater Mollusca of the Maltese Group.—Zool. May 1878, p. 193, &c.

Fischer (Dr. Paul.)—Essay on the Geographical distribution of the Brachiopoda and Mollusca of the Oceanic Littoral of France.—Essai sur la Distribution Géographique des Brachiopodes et des Mollusques du littoral océanique de la France.—Actes Soc. Linn. Bordeaux, 1878, xxxii., pp. 171 to 215.

This lengthy and elaborate essay is intended to compare the fauna of the Western Coast of France with those of the British Isles and of the French Mediterranean coast-line. The first section treats of the sub-divisions of the Western Coast of France, three in number: 1st, *the region of Normandy or of the Manche*, which extends from Dunkirk to Cape la Hogue; 2nd, *the Armorican region*, from Cape la Hogue to the mouth of the Loire; 3rd, *the Aquitanian region* extends from the Loire to the Biddassoa.

In the second section is cited a list, with localities, of 8 Brachiopoda and 561 Mollusca (including 176 *Acephala*, 2, *Pteropods* 362 *Gastropods*, and 21 *Cephalopods*). Of these however, 21 are considered doubtful. For comparison, the numbers inhabiting the British seas are cited, thus; 5 *Brachiopods*, 167 *Acephala*, 2 *Pteropods*, 363 *Gastropods* and 12 *Cephalopods*, total 549 species.—The Mediterranean fauna includes 1,015 species (10 *Brachiopods*, 273 *Acephala*, 19 *Pteropods*, 660 *Gastropods* and 53 *Cephalopods*). Of the 569 species in the French Oceanic list, 336 are also found in the British and Mediterranean seas, 91 others in the British seas but not in the Mediterranean, 82 in the Mediterranean but not in the British seas, while no less than 60 are found neither in the British nor Mediterranean Seas.

The 4th, 5th, 6th and 7th sections are devoted to detailed comparisons of these various lists, while the 8th deals with the origin of the marine mollusca of the French Oceanic Coast, from a geological point of view—the conclusion being that the fauna includes more species of Mediterranean than of British origin and that it is consequently of a most pronounced Mediterranean type. But the great fact elicited is the extensive range of most of the species, both now and in the past. Out of 380 fossil forms, 159 were common to the Northern and Mediterranean seas, and the same may be said of 336 out of the 559 recent species.

The 9th section treats of the changes in the limits of the habitat of the species, and the 10th of the species which are fossil in England and no longer exist there at the present time, but which now live in the French and Mediterranean seas. The 11th treats of the fossil species of the Mediterranean basin which do not now exist in that sea, but are to this day found living in the French and British seas. The 12th treats of the recent extension of species of Mediterranean origin; the 13th of the influence of ocean-currents, the 14th of bathymetrical distribution, the 15th of the species found at extreme depths in the Gulf of Gascony; while a bibliographical index concludes the paper.

30th Meeting.

The President Mr. W. Nelson in the chair.

Minutes of last meeting were read and confirmed.

NEW MEMBERS.

Mr. John Brazier, C.M.Z.S., of Sydney, and Mr. J. W. Cundall, Carrville, Bristol were proposed for membership.

DONATIONS OF SHELLS TO MEMBERS AND SOCIETY'S COLLECTION.

The Secretary read a communication from R. D. Darbishire, Esq., B.A., B.Sc., of Victoria Park, Manchester, offering to present specimens of *Panopæa Aldrovandi* from Faro.

The specimens referred to were laid on the table and the thanks of the Society were voted to the donor.

EXHIBITIONS.

Mr. JOHN W. TAYLOR exhibited a number of Australian *Physæ* which he had received for examination from J. H. Ponsonby, Esq., of London, and which had been acquired from Mr. Angas.

A number of shells were brought forward and distributed amongst those members requiring them.

Mr. R. SCHARFF exhibited specimens of

Helix arbustorum

Helix rufescens

Pupa umbilicata

Helix sericea

from Hardraw Scar, Wensleydale.

Mr. W. D. ROEBUCK, exhibited the following shells from Wetherby, collected by Dr. Wesley :—

Helix Cantiana *Helix hortensis* (small.)

Pisidium pusillum, from Baildon Moor.

CRITICAL REMARKS ON THE REV. J. E. TENISON
WOODS' "CENSUS OF TASMANIAN SHELLS."

By W. F. PETTERD.

The following specimens are synonymous :—

1. **Assiminea** the same as *Rissoa siennæ*.
2. **Trophon Brazieri** the same as *Siphonalia castanea*.

The only feature of difference is that *S. castanea* are beach-worn specimens.

3. **Siphonalia pulchra** the same as *Pleurotoma philomenæ*.

The only difference between these shells is that *Siphonalia pulchra* is a young shell with the lip undeveloped.

4. **Ruma globosa** the same as *Ruma umbilicata*, but somewhat larger than the typical forms.
5. **Conus Macleayana** is the same as *Conus rutila*.

There can be but little doubt that Woods' species *C. Macleayana* is but a large specimen of *C. rutila*, *vide* description.

6. **Phasianella delicatula**.

This is but the young immature *P. tritonis*. I have collected specimens showing every gradation of growth.

7. **Turbo Simsoni**.

Undoubtedly, but the young of *T. undulatus*. Specimens are to be found as often with as without the carination, which is lost on the more mature growth of the shell.

8. **Carinidea Tasmanica**.

As the Rev. Mr. Woods supposes, but the young of *C. aurea*. I have a series illustrating the stages of growth from the fry to the fully developed *C. aurea*, collected on various parts of the coast. It is somewhat abundant in certain localities on the South coast and also at Tamar Heads, on the North coast, at low water on the rocks and large stones.

9. **Gibbula multicarinata.**

This is but a very beach-worn dead specimen of *Clan-
culus nodo-liratus*, with the lip broken or not fully developed.

10. **Trochus Australis**

Is in all probability fully grown *Gibbula depressa*.

11. **Kraussia Atkinsoni**

Is but one of the varieties of *K. Lamarkiana*, a variable shell both as to shape and markings.

The shell described as *Gouldia Tasmanica*, in Pro. Royal Soc. Tas., by Rev. T. Woods, for 1876, is but the free fry of an undescribed species of *Myochama* that I have obtained with the dredge at Long Bay parasitic on *Pecten fumatus*, as is shown by the umbones of a series in my collection which shows the gradual development, from the free swimming form, till it obtains its mature growth on the *Pecten*. Probably it is also to be found in other shells, but hitherto I have only noticed it on the shell before mentioned. In this case as the mature form is not described, perhaps it may be as well to designate it *Myochama tasmanica*—*Kellia tasmanica* is omitted from the 'Census.'

I cannot agree with the remarks of Mr. Woods in 'Census,' in reference to the species of the genus *Chiton*. No doubt they show great varieties in color according to age, and they may vary much in growth and form according to the rock to which they attach, or the various parts of the coast may have more or less influence on their development. Nevertheless I consider the number of species very great and as a rule extremely restricted in their distribution, and that an individual species does not vary to any great extent, or in fact more than any other species of mollusk. Many other very distinct species are known to local collectors here, besides those enumerated that have been obtained in a living condition and not young or worn shells. In my opinion Tasmania is rich in *Chitons*.

DESCRIPTIONS OF THREE NEW *HELICES* FROM AUSTRALIA.

By W. F. PETTERD.

1. *Helix Fernshawensis*, n. sp.

Shell perforated, convexly depressed, dull brown, very irregularly, prominently streaked with lines of growth; whorls $4\frac{1}{2}$, spire small, convex, apex smooth, blunt, somewhat corroded, suture well marked; last inflated, not descending in front, periphery rounded; base convex, marked same as upper surface; aperture very large, lunately rounded, margin distant, columellar margin suddenly expanded, entirely covering the perforation, peristome simple.

Diameter, greatest $6\frac{1}{2}$, least 5; height $3\frac{1}{2}$, mill.

Habitat—Fernshaw, Victoria.

A very distinct species, allied to *H. radians* Pfr. said to be from Port Jackson, New South Wales, and more closely to *H. Vitrinæformis* Cox, from Tasmania. I am indebted for this and the other species now described to the kindness of my friend, Mr. W. Kershaw.

2. *Helix Dandenongensis*, n. sp.

Shell widely unbilicated, flatly discoid, pale blueish-white, prominently, closely, regularly ribbed, interstices decussate; spire flat, suture very much impressed; whorls $5\frac{1}{2}$, regularly increasing, convex, apex smooth, last slightly flattened above, periphery rounded; base convex, sculptured as above, running into the umbilicus, which is very large, shallow, freely exposing the whorls and flat at the bottom; aperture lunate, margins distant, peristome simple, columellar margin very faintly expanded.

Diam., greatest 5, least 4; height $1\frac{1}{2}$ mill.

Habitat—Dandenong Range, Victoria.

Somewhat plentiful. The nearest species that I am

acquainted with to this is *H. Bassi* Brazier, from Tasmania, from which it differs in its much larger size, depression of the upper portion of the body whorl, and the peculiar umbilicus, which is very characteristic and which separates it from all other Australian species.

3. *Helix Otwayensis*, n. sp.

Shell small, imperforate, thin, orbicularly-depressed, fawn-color, finely and closely ribbed throughout, interstices minutely decussate; spire flat, apex smooth; whorls $5\frac{1}{2}$ convex, striæ as above, aperture ovately-lunate, margins distant, joined by a thin, shining callus, columellar margin slightly thickened, peristome simple.

Diam., greatest 2, least $1\frac{1}{2}$; height 1, mill.

Habitat—Cape Otway, Victoria.

A pretty little shell resembling *H. limula* Cox, from Tasmania, and *H. sericatula*, Pfr. from New South Wales.

The above species are very interesting, as they add to our knowledge of the least known portion of Australia, as far as the land molluscan fauna is concerned. Possibly many more species will be discovered in the dense brushes and mountain ranges.



NOTES ON A HYBRID *RUMINA DECOLLATA*.

By ROBERT SCHARFF.

In the transactions of the "Société Linnéenne" of Bordeaux, M. Gassies gives an account of his latest researches on a hybrid of *Rumina decollata* (*B. decollatus*.)

As the result of these studies will be interesting to conchologists, I take the liberty of giving a few extracts from his elaborate paper on this subject:—

"In 1875, a friend of mine presented me with a few

specimens of the Algerian variety of the *R. decollata*, which is nearly as large again as the specimens I collected at Agen, in the South of France. I then possessed a considerable number from the latter locality, and put them together in one large box, specially made for the purpose, and ascertained the pairing of two varieties.

"Some time after, the box was filled with hundreds of young, of which I chose the strongest, and kept them in a separate place.

"I watched them very attentively, and soon perceived that they seemed to belong to the Algerian variety. Like that, the back of the animal was of a dark violet color, whilst the foot had a slightly yellowish tint.

"The shell was dark brown, bearing small longitudinal white lines.

"Nothing extraordinary manifested itself during the first year; most of them closed their aperture by means of an epiphragm, and remained inert during the winter season.

"In spring 1877, I remarked that the peristome of several specimens grew like that of the original Algerian *decollata*. The size of the shell was rather short, and the spire was composed of only four whorls. In fact, they were like the French specimens as regards size, only heavier and thicker.

"The following year I was obliged to neglect my pupils on account of various other occupations. However, as they were in my room, I one day opened the boxes to see whether they were well provided for, when I perceived to my great astonishment, a few of them with a continued peristome, possessing a dentiform blade, which seemed to me quite abnormal.

"I have in my collection *R. decollata* from various parts of France, Italy and Algiers, and I have only seen one individual where I have been able to see a commencement of denticulation

or thickness of the upper junction of the peristome.

At present I possess several hundred of these hybrids, all furnished with this peculiar dentiform lamellum."



NOTE ON *HELIX WELDII* Woods.

By W. F. PETTERD.

This extremely minute species is of great interest, as it is the only sinistral *Helix* hitherto discovered in Australia. Among our numerous species of *Helix* there are one or two that come somewhat near it in general characters, yet it is nevertheless very distinct and it is invariably reversed. Its habitat is very restricted, being only found, as far as at present known, in one locality, at the foot of the high rocks near the township of Stanley, Circular Head, Northwest coast of Tasmania. In habitat it is somewhat peculiar, as it is only to be obtained on the upper surface of blocks of rock that are overgrown by a thick mass of vegetation, associating with two or three larger species of the same genus. It is somewhat abundant, and generally a number are found clustering together in the same crevice or indentation of the rock.



BIBLIOGRAPHY.



1878.



Bellardi (Prof. Luigi).—New Fossil Genus of Bullidæ from Piedmont and Liguria.—Descrizione di un nuovo genere della famiglia delle Bullide fossile del terreno pliocenico inferiore del Piemonte e della Liguria.—Bull. Soc. Mal. Ital., 1876, ii., pp. 207 to 210 and tav. C, fig. 5, 6, 7, 8.

The new genus is named *Sabatia*, instituted for the reception of *S. Isseli* Bellardi (= *Bulla plicata* Bellardi, non Deshayes).

Brugnone (l'Abate G.)—**Two New Fossils from Altavilla, Sicily.**—Due specie fossili nuove di Altavilla.—Bull. Soc. Mal. Ital., 1876, ii., pp. 216 to 218 and tav. C, fig. 3, 4.

Pleurotoma (Drillia) pseudosigma and *Mitra De-Stefanii*.

Conrad (T. A.)—**Note on a Cirripede of the Californian Miocene, with remarks on Fossil Shells.**—Proc. Ac. Nat. Sci. Philad., 1876, pp. 273 to 275.

Helix strangulata Ad. (Virginia), *Inoceramus* Sow., *Aphrodina* Conrad, *Idonearca* Conrad, *Haplothærus*, *Anchura*, &c., are noticed.

Deby (Julien).—**Fossil Shells of West Flanders.**—Note sur l'Argile des Polders, suivie d'une liste de fossiles qui y ont été observés dans la Flandre Occidentale.—Ann. Soc. Mal. Belg., 1876, xi., pp. 69. to 90.

This paper is mainly devoted to Foraminifera and Diatoms, and only includes a list of 14 mollusks.

Gabb (W. M.)—**Notes on American Cretaceous Fossils, with Descriptions of some new species.**—Proc. Ac. Nat. Sci. Philad., 1876, pp. 276 to 324 and plate 17.

This paper is in one sense a geographical list of the fossils of Georgia and includes the names of 4 *Nautilus*, 2 *Ammonites*, 1 *Hamites*, 1 *Fusus* (a new subgenus, *Exilifusus*), 3 *Surcula*, 1 *Drillia*, 2 *Lagena* (s.g. of *Tritonium*), 1 *Nassa*, 1 *Fasciolaria*, 3 *Cryptorhytis* (s.g. of *Fasciolaria*), 6 *Pyropsis*, 3 *Volutoderma* (new genus created from *Fulgoraria*), 1 *Leioderma*, 6 *Volutomorpha* (new genus), 1 *Rostellites*, 1 *Ptychosita* (new genus, connecting *Ficulopsis* and *Ficus*), 2 *Gyrodes*, 1 *Amauropsis*, 2 *Lunatia*, 3 *Opalia* (s.g. of *Scala*), 2 *Anchura*, 1 *Aporrhais*, 1 *Turbinopsis*, 1 *Gyrotropis* (new genus allied to *Trichotropis*), 1 *Turritella*, 1 *Laxispira* (new genus), 1 *Bivonia*, 1 *Eudoptygma* (new genus, allied to *Phorus*), 2 *Ataphrus*, 1 *Xylophagella* (s.g. of *Turnus*), 2

Martesia, 1 *Leptosolen*, 1 *Legumen*, 1 *Periplomya*, 1 *Solyma* (not *Solemya*), 1 *Pholadomya*, 1 *Cymbophora*, 1 *Schizodesma*, 1 *Tenea*, 1 *Tellina*, 1 *Gari*, 1 *Peronazoderma*, 2 *Cyprimeria*, 3 *Trachycardium* (s.g. of *Cardium*), 1 *Granocardium* (ditto), 3 *Crassatella*, 1 *Anthonya*, 1 *Opis*, 1 *Lithophaga*, 1 *Inoceramus*, 3 *Trigonia*, 1 *Venilia*, 7 *Idonearca*, 1 *Nemodon*, 1 *Trigonarca*, 1 *Axinæa*, 2 *Nucula*, 1 *Nuculana*, 1 *Camptonectes*, 1 *Sincyclonema*, *Neitheia*, 1

Granger (Albert).—**Lists of Fossils from Cette, France.**—
Observations sur des roches provenant du canal, à Cette.—
Compte Rendus, Soc. Linn. Bordeaux, 1878, vol. xxxii.,
p. 60 and 61.

Harmer (F. W., F.G.S.).—**List of Mollusca from the Norfolk Coast.**—91 marine species. Taken from a paper by him on the marine mollusca of the Norfolk coast.—Trans. Nor. Nat. Soc., vol. i., p. 42, 1869-74.

Harting (J. E.).—**The Land and Freshwater Mollusca of Sussex.**—Zool., March 1878, third series, ii., 84 to 94, April 1878, ii., 122 to 126, May 1878, ii., 161 to 168.

Hastings and St. Leonard's Philosophical Society.—
The Natural History of Hastings and St. Leonard's and the vicinity.—1878, 8vo., pp. 68.

This little book is a list of names embracing the whole fauna and flora of the portion of Sussex included. Localities are not given, although indications of rarity or frequency of occurrence are. The list of 5 *Cephalopoda*, 2 *Nudibranchiata*, 48 *Prosobranchiata*, 1 *Solenocoenchia*, 50 *Pulmonobranchiata* and 67 *Conchifera*—altogether 173, of which 21 are freshwater and 37 land shells—The introduction hints that Mr. A. W. Langdon will receive additions to the list, which we hope is only the prelude to a more complete and detailed fauna and flora of that district.

Heimburg (H. von.).—**Molluscan Fauna of Oldenburg.**—
Zur Mollusken-fauna von Oldenburg.—Nachrichtsblatt
Deuts. Mal. Ges., Jan. 1878, x., 4 to 6.

To the former list are added a *Limax*, a *Hyalina*, a *Cionella*, 2 species of *Limnæa*, 2 of *Planorbis*, a *Valvata*, and 2 species of *Hydrobia*. The paper concludes with a number of additional remarks on *Helix Cantiana* and other species.

Heller (Prof. C.) **Contributions to the fuller knowledge of the Tunicata.**—Sitzungsberichte der k. ak. d. Wissenschaften. Section I, Mathematics—Natural Science, vol. lxxvii, part 2, Feb. 1878. 6 plates.

Hesse (P.)—**Contribution to the Molluscan Fauna of Westphalia.**—Verhandlungen der Naturhistorischen Vereines der preussischen Rheinlande und Westphalens—35th year, vol. v., part I, (Bonn: Max Cohen & Son, 1878.)

Ihering (Dr. H. von.)—**Contributions to the Anatomy of Chiton.**—Morphologisches Jahrbuch, vol. iv., 1878.

Jeffery (William) **Land and Freshwater Mollusca of Sussex.**—Zool. May 1878, vol. ii., 180 and 181.

A list of 14 species additional to Mr. Jeffrey's list of West Sussex mollusca, published in 1868 (Zool. May). 1 *Paludina*, 2 *Helix*, 1 *Limnæa*, 1 *Ancylus*, 2 *Physa*, 5 *Planorbis*, 1 *Pisidium*, and 1 *Unio*.

Jeffreys (J. Gwyn, LL.D., F.R.S.)—**Notice of some shells dredged by Capt. St. John, R.N., in Korea Strait.**—Jour. Linn. Soc., Zool. 1878, vol. xiv., 418 to 423.

Dr. Jeffreys gives remarks on numerous species common to the Northern portions of the Atlantic and Pacific Oceans, and their probable common origin in the Arctic Ocean, the method of dispersion being a bifurcation of the Arctic Current. Capt. St. John's dredgings confirm this view.

Jeffreys (Dr. J. Gwyn, F.R.S.)—**Notes on some British Land and Freshwater Shells.**—Annals and Mag. N. H., Nov. 1878, pp. 377 to 382.

Dr. Jeffreys discusses Dr. Baudon's monograph of *Succinea*

and criticizes his conclusions.—Dr. Jeffreys adds to the British fauna a species, *S. virescens* Morelet = *S. debilis*, Baudon, = var *vitrea* of *S. putris*, Jeff. Next comes under discussion Dr. Westerlund's diagnoses of *H. hispida* and *H. concinna*, and his synonymy of *H. virgata*. Dr. Jeffreys changes the name of his Irish specimens of *Vertigo*, which he had previously called *Moulinsiana*, to *V. Lilljeborgi*, and brings forward the true *Moulinsiana* Dupuy, as an addition to the British list, with several localities. Another addition, is *Vertigo tumida* Westerlund, hitherto in Dr. Jeffreys collection under the name of *V. pusilla* var. A note follows on *V. angustior* Jeff. Notes on the synonymy of *Clausilia rugosa* Drap., and on a reversed specimen of *Valvata piscinalis* Müll., concludes the paper.

Leidy (Prof. Jos., M.D.)—**Remarks on Mactra**.—Proc. Acad. Nat. Sci. Philad. 1878, pp. 332 and 333.

The note has reference to *M. solidissima*, the Beach-clam, frequent on the sandy coast of New Jersey; and to its numerous enemies, especially *Natica heros*; also to the diatoms which form its food.

Leidy (Prof. Jos., M.D.)—**On Donax fossor**.—Proc. Acad. Nat. Sci. Philad. 1878, pp. 382 and 383.

This shell, known as the "Digger" was abundant at Cape May, N. J., when Prof. Leidy made the observations in this note upon its habits and its parasites (a species of Fluke, &c.)

Lewis (James, M.D.)—**On Unio subrostratus** Say.—Proc. Acad. Nat. Sci. Philad. 1878, p. 273.

The author's endeavour is to dispel the obscurity which has been thrown round this shell by the influence of trifling errors.

Lockington (W. N.)—**Walks round San Francisco. No. III. Lake Honda and Seal Rock**.—Amer. Nat., Dec. 1871, vol. xii., pp. 786 to 793.

Includes notes on freshwater and marine mollusca.

Lockington (W. N.)—Walks round San Francisco.—The Bay Shore.—Amer. Nat., Aug. 1878, vol. xii., p. 505 to 512.

Notes on, inter alia, the common mollusks, marine or terrestrial.

Lockwood (S.)—Argonauta tuberculosa.—Amer. Nat., Aug. 1878, vol. xii., p. 560.

Having found it on the coast of New Jersey, the author thinks its geographical range is enlarging.

Macleay (William, F.L.S.)—On the power of locomotion in the Tunicata.—Proc. Linn. Soc. New South Wales, 1878, vol. iii., p. 54 and 55.

Malaise (M. C.)—Discovery of Brachiopoda of the genus Lingula.—Bull. de l'Ac. R. des Sc., des Lett. et des B. arts de Belgique, second series, vol. xlv., 1878.

Mather (Fred.)—Freshwater Mussels and Ducks.—Amer. Nat., Oct. 1878, vol. xii., p. 695.

It is not possible to keep ducks in some parts of Virginia, as at low water the ducklings were liable to be caught and held by the mollusks till drowned by the rising tide.

Mazyck (Wm. G.) and Vogdes (A. W.)—Description of a new fossil from the Cretaceous Beds of Charleston S. C.—Proc. Acad. Nat. Sci. Philad., 1878, p. 272, and woodcut.

Anomia Andersonii.

Monterosata (Marchese di)—Enumeralization and synonyms of the Conchifera of the Mediterranean.—Giornale di Scienze naturali ed economiche.—(Palermo 1878, vol. xiii.)

Montaube Freres (M.M. de.)—Practical Studies on the enemies and maladies of the Oyster in the Basin of Arcachon.—Etudes pratiques sur les ennemis et les maladies de l'Huitre dans le bassin d'Arcachon.—Actes Soc. Linn. Bordeaux, 1878, vol. xxxii., p. 217 to 245.

The vegetable enemies enumerated include *Zostera marina* L., *Ceramium rubrum* Ag., *Ulva lactuca* L., *Ceramium diaphanum* Roth., *C. latevirens* Kg., and various Diatomaceæ. The list of animal enemies includes crabs (*Polybius Henslowei* Leach, and *Carcinus Mænas*, Penn.) Fishes (*Carcharias glaucus* Cuv., *Trygon pastinaca* Cuv., and *Crenilabrus viridis* L.) Mollusca (*Murex erinaceus* L., and *Nassa reticulata* Desh.), Echinoderms (*Asterias rubens* Gmel.), Crustacea (*Palæmon squilla* Edw. and *Talitrus saltator* Edw.) the mussel (*Mytilus edulis* L.) various marine worms (a Filarian one, and *Arenicola piscatorum* Lk.), Polyps and Ascidians. Numerous diseases are also described and named.

Owen (Prof.)—**Memoir on the relative positions to their constrictors of the chambered shells of Cephalopods.**
—Zool. Soc., Nov. 19th, 1878.

Packard (A. S., junr.)—**Some characteristics of the Zoogeographical province of the United States.**—Amer. Nat., Aug. 1878, vol. xii, p. 512 to 517.

This paper though not dealing specially with mollusca will yet be of considerable interest to the malacologist.

Pfeffer (Dr. George.)—**Contributions to the knowledge of the Hermaphroditism and the Spermatophores of Gasteropoda.**—Archiv für Naturgesch., 44th year, vol. I, part 3. 1 plate.

Poulsen (Dr. C. M.)—**Catalogue of West India Shells in the collection of Dr. C. M. Poulsen, of Copenhagen.**
—8vo., p. 16.

This list includes 353 land and freshwater, and 800 marine species from various West Indian localities.

Sars (G. O.)—**Molluscan Fauna of Arctic Norway.**—Bidrag til kundskaben om Norges arktiske fauna, I, Mollusca Regionis Arcticæ Norvegiæ.—Christiania, 1878, 8vo., p. 466. May and 52 autographic plates.

Stefani (Dott. Carlo de)—and Pantanelli (Dott. Dante.)—
Pliocene Mollusca of the Sienna District.—Molluschi,
 pliocenici dei Dintorni di Siena.—Bull. Soc. Mal. Ital., 1878,
 vol. iv. and v.—112 and not finished.

The list is prefaced by a lengthy introduction, a table of the pliocene strata of Sienna and their fossil contents, an elaborate bibliography and a note on the numbers of species described by each author, and includes 2 species of *Anomia*, 1 *Gryphæa*, 2 *Ostrea*, 1 *Spondylus*, 1 *Janira*, 2 *Amussium*, 3, *Pseudamussium*, 1 *Syxis*, 9 *Pectens* (of one of which, *P. flabelliformis* Brocchi, a variety is described as new, *Bosniackii* Stef. & Pant.) 3 *Hinnites*, 2 *Lima* (one of them new, *L. Targionii* S. & P.) 1 *Perna*, 1 *Meleagrina*, 2 *Pinna*, 1 *Mytilus*, 1 *Modiola*, 1 *Lithodomus*, 2 *Modiolaria*, 1 *Dreissena*, 2 *Arca*, 5 *Barbatia* (one new, *B. Mortilleti* S. & P.) 3 *Anomalocardia*, 1 *Soldania*, 2 *Pectunculus*, 2 *Limopsis*, 4 *Nucula*, 1 *Neilo*, 2 *Yoldia*, 4 *Leda*, 1 *Mytilicardia*, 3 *Cardita*, 1 *Woodia*, 1 *Scintilla* (a new species *bipartita* S. & P.) 2 *Tellmya*, 2 *Kellia* (one of which *K. peregrina* S. & P. is new) 1 each of *Mysia*, *Ungulina*, and *Loripes*, 3 *Lucina*, 1 *Jagonia*, 2 *Chama*, 1 *Pecchiolia*, 2 *Lævicardium*, 5 *Cardium*, 1 *Isocardia*, 1 *Meiocardia*, 1 *Cypricardia*, 1 *Circe*, 1 *Artemis*, 5 *Cytherea*, 10 *Venus*, 3 *Tapes*, 2 *Venerupis*, 1 *Petricola*, 1 each of *Donax*, *Capsa* and *Arcophagia*, 5 *Tellina*, 3 *Psammobia* (of which one is new, *P. Planci* S. & P.), 2 *Syndosmia*, 1 *Mesodesma*, 2 *Ervilia*, 1 each of *Solen*, *Panopæa*, *Saxicava*, *Thracia* and *Pandora*, 2 *Mactra*, 1 each of *Eastonia*, *Lutraria*, *Eucharis* (new, *E. Cypricardina* S. & P.) 3 *Corbula*, 1 *Sphenia*, 2 each of *Clavagella*, *Gastrochæna*, *Jouanetia*, 1 each of *Teredo*, *Creseis*, *Cleodora*, *Diacria*, *Siphonodentalium*, *Cadulus*, 2 *Entalis*, 6 *Dentalium*, 1 *Scaphander*, 1 *Sabatia* (new, *S. utriculoides* S. & P.), 3 *Atys* (two new, *A. Silvestrii* S. & P., and *A. cannabis* S. & P.), 2 *Haminea*, 1 *Volvula*, 2 *Cylichna*, 2 *Ringicula*, 1 each of *Bullina*, *Actæon*, *Fissurella*, *Margarita*, 4 *Zizyphinus* (two new, *Z. simulans* S. & P. and *Z. Lawleyi* S. & P.), 1 *Clanculus*, 5 *Gibbula* (of one of which *G.*

adriatica Philippi, is described a new var. *Seguenzai* S. & P.), 2 *Turbo*, 2 *Phasianella*, 2 *Adeorbis*, 3 *Neritina*, 2 *Torinia*, 5 *Solarium*, 3 *Cirsotrema* (one new *C. ansonia* S. & P.), 4 *Opalia* (one new, *O. ridens* S. & P.), 6 *Scalaria*, 2 *Typhis*, 18 *Murex*, 3 *Purpura*, 2 *Euthria*, 1 *Metula*, 7 *Polia*, 5 *Fusus*, 1 each of *Phos*, *Cyclops*, *Pseudostrombus*, 2 *Eione*, (one new, *E. Paretoi* S. & P.), 20 *Nassa* (new, *N. Libassii* de Stefani *N. Tournouéri* S. & P.=*N. Basteroti* auct.), 6 *Columbella* (one new, *C. vittata* S. & P.), 3 *Strombina*, 4 *Fasciolaria* and 6 *Mitra*.

Stearns (R. E. C.)—Description of a new species of *Dolabella* from the Gulf of California, with remarks on other rare or little-known species from the same region.—Proc. Acad. Nat. Sci. Philad. 1878, p. 395 to 401 and plate 7.

The new species is *Dolabella Californica*. The other species referred to are *Murex* (*Ocenebra*) *erinaceoides* Val. (=? *M. californicus* Hds.); *Macron* *Ethiops* Reeve (= *M. Kellettii* Hinds); *Cypræa* (*Luponix controversa* Gray; and *Onchidella Carpenteri*, Stearns (= *Onchidium Carpenteri* W. G. Binney). Remarks by Mr. G. W. Tryon junr., are intercalated in the remarks on some of the species.

Studer (Prof. T.)—Contribution to the Natural History of the Invertebrate animals of Kerguelensland.—Arch. für Naturgesch, 44th year, vol. i., part I., 3 plates.

Smith (Edgar A., F.Z.S.)—Abnormal growth of a New Zealand Land Snail.—Zool., Feb. 1878, 3rd series, vol. ii., pp. 61 and 62.

A specimen of *Paryphanta Hochsetteri* Pfr., from the Whakamarama Mountains, N.W. of Nelson, N.Z., the peculiarity of which consists in the flexibility of its substance and the total absence of the shelly deposit which lines the interior of normal specimens—Mr. Smith surmises that it had been reared in a situation where it was unable to obtain the requisite quota of carbonate of lime.

Schneider (Dr. Oscar).—**Natural History of Caucasus.**—*Jour. of Isis Soc. of Dresden.*—Mollusca—by Editor, arachnoids, hemiptera, alga, minerals, rocks, fossils, 160, pp. and 5 plates.

Tate (Prof. Ralph).—**Descriptions of three New species of Helix from South Australia.**—*Proc. Linn. Soc., New South Wales* 1878, vol. ii, pp. 290 and 291.

Helix induta, related to *H. Lincolnensis* Pfr., North Para River; *H. pictilis*, resemble *H. Penolensis* Cox, slopes of the Cape Northumberland Cliffs; and *H. arenicola*, closely resembling the European *H. rupestris*, Holdfast Bay and Surveyor's Point Yorke's peninsula and River Murray Cliffs at Mannum.

Wattebled (G.).—**Discovery of Cyrena Geslini at Merignac.**—*Découverte du Cyrena Geslini à Mérignac.*—*Comptes Rendus, Soc. Linn. Bordeaux*, 1878, vol. xxxii., p. 17.

Wattebled (G.).—**On a new shell-bearing fossil at Sime.**—*Sur un nouveau gisement coquillier à la Sime.*—*Comptes Rendus, Soc. Linn. Bordeaux*, 1878, vol. xxxii., p. 61.

Yields *Cardita Jouanneti*.

Wattebled (G.).—**The habitats of some of the Mollusca of the mountains of the Basses-Pyrenees.**—*Note sur l'habitat de quelques mollusques terrestres des montagnes des Basses-Pyrénées.*—*Comptes Rendus Soc. Linn. Bordeaux*, 1878, vol. xxxii., pp. 81 to 83.

The notes refer to *Helix constricta* Boub., *H. Quimperiana* Fér., *Clausilia Pauli*, *Azeca tridens* Pult., *Pomatias obscurus* Drap., and *Unio Margaritifera* L.

Weatherby (W. G.).—**Terrestrial Mollusca of Texas.**—*Amer. Nat.*, March 1878, vol. xii., p. 184 and 185 and 2 woodcuts.

Notes on various species of *Helix*, *Zonites*, *Bulimulus*, *Helicina* and *Pupa*. A new variety of *Helix vultuosa* is described under the name of *H. Copei*; collected in Hardin County.

PROCEEDINGS OF THE CONCHOLOGICAL SOCIETY
OF GREAT BRITAIN AND IRELAND.

1879.

51st Meeting.

Held at the Society's room, Leopold Square, Leeds.

Minutes of last meeting read and confirmed.

NEW MEMBERS.

The following gentlemen were unanimously elected members of the Society :—

Mr. John Brazier, C.M.Z.S., of Windmill St., Sydney,

Mr. J. W. Cundall, Esq., of Carville, Bristol.

DONATION TO THE LIBRARY.

A Monograph of Tasmanian land shells by Mr. W. F. Petterd presented by Mr. W. F. Petterd, of Launceston, Tasmania, and the thanks of the Society was voted to the donor.

PAPERS READ.

The conchological fauna in the alluvium of rivers, how to procure the various species and their comparative numbers, by Mr. Robert Scharff, vice-president of the Society.

[This paper is printed in the 'Journal of Conchology.']

ELECTION OF OFFICERS.

Mr. J. W. TAYLOR—*President*.

„ W. CASH, F.G.S., and Mr. W. NELSON—*Vice-Presidents*.

„ T. W. BELL—*Secretary*.

„ R. SCHARFF—*Treasurer*.

„ W. DENISON ROEBUCK—*Recorder*.

COMMITTEE.

Mr. B. HOLGATE, F.G.S., of Leeds.

Dr. HILL EVANS, of Bradford.

Mr. J. W. DAVIS, F.S.A., F.L.S., &c., of Halifax.

„ J. D. BUTTERELL, of Hull.

„ A. LEICESTER, of Liverpool.



the 1990s, the number of people in the UK who are aged 65 and over has increased by 1.5 million, and the number of people aged 75 and over has increased by 1 million (Office of National Statistics 1999). The number of people aged 85 and over has increased by 300,000 in the same period.

There is a growing awareness of the need to develop services to meet the needs of the ageing population. The Department of Health (1999) has set out a strategy for the future of health care for older people. This strategy is based on the principle that older people should be able to live in their own homes for as long as possible, and that health care should be provided in a way that is appropriate to their needs. The strategy also emphasizes the importance of preventing illness and promoting health in older people.

The strategy is based on three main pillars: prevention, primary care, and secondary care. Prevention is the first pillar, and it focuses on promoting health and preventing illness in older people. Primary care is the second pillar, and it focuses on providing health care in the community. Secondary care is the third pillar, and it focuses on providing health care in hospitals and other specialist settings.

The strategy also emphasizes the importance of working in partnership with older people and their families. This means that health care providers should listen to the views of older people and involve them in decisions about their care. It also means that health care providers should work closely with families to provide the best possible care for older people.

The strategy is a long-term plan, and it will be reviewed regularly. It is important to note that the strategy is not a blueprint, and it will need to be adapted to meet the needs of different communities. However, the strategy provides a clear framework for the future of health care for older people in the UK.

The strategy is based on the principle that older people should be able to live in their own homes for as long as possible. This means that health care should be provided in a way that is appropriate to their needs. The strategy also emphasizes the importance of preventing illness and promoting health in older people.

The strategy is based on three main pillars: prevention, primary care, and secondary care. Prevention is the first pillar, and it focuses on promoting health and preventing illness in older people. Primary care is the second pillar, and it focuses on providing health care in the community. Secondary care is the third pillar, and it focuses on providing health care in hospitals and other specialist settings.

The strategy also emphasizes the importance of working in partnership with older people and their families. This means that health care providers should listen to the views of older people and involve them in decisions about their care. It also means that health care providers should work closely with families to provide the best possible care for older people.

The strategy is a long-term plan, and it will be reviewed regularly. It is important to note that the strategy is not a blueprint, and it will need to be adapted to meet the needs of different communities. However, the strategy provides a clear framework for the future of health care for older people in the UK.



3 6105 019 975 205

BRANFORD
SCIENCES LIBRARY

594.05

584

V. 2

1879

STANFORD UNIVERSITY LIBRARIES
STANFORD AUXILIARY LIBRARY
STANFORD, CALIFORNIA 94305-6004
(650) 723-9201
salcirc@sulmail.stanford.edu
All books are subject to recall.
DATE DUE

320